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ISBN 0-315-55579-3

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THE UNIVERSITY OF ALBERTA

TEACHERS' PERSPECTIVE SYSTEMS

BY

GWENDOLYN ELAINE JANET McDONALD HALABISKY

A THESIS
SUBMITTED TO THE FACULTY OF GRADUATE STUDIES AND
RESEARCH IN PARTIAL FULFILMENT OF THE
REQUIREMENTS FOR THE DEGREE OF
DOCTOR OF PHILOSOPHY

DEPARTMENT OF ELEMENTARY EDUCATION

EDMONTON, ALBERTA
(FALL) (1989)

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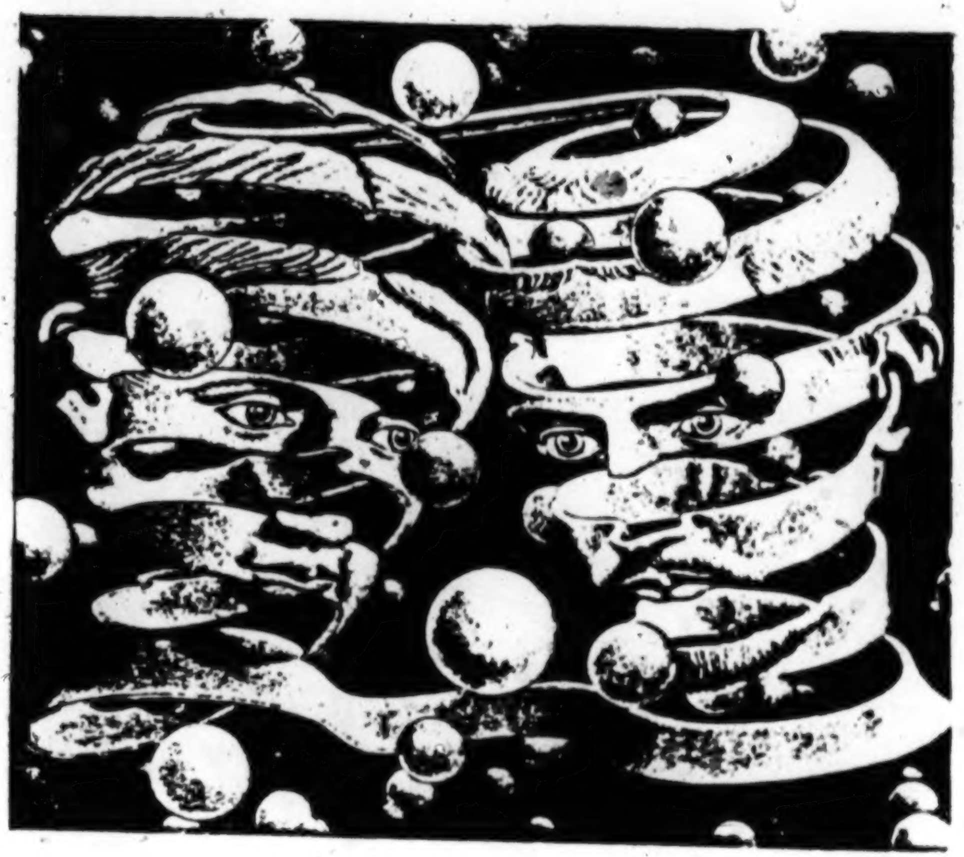
We have only the world that we bring forth
with others, and only love helps us bring it forth.
(Maturana and Varela)



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Among human beings the basic stabilizing factor
in the constitution of social systems is the phenomena
of love,
the seeing of the other as a partner in
some or all dimensions of living.
(Maturana)

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The undersigned certify that they have read, and recommend to the Faculty of Graduate Studies and Research for acceptance, a thesis entitled Teachers' Perspective Systems submitted by Gwendolyn Elaine Janet McDonald Halabisky in partial fulfilment of the requirements for the degree of Doctor of Philosophy:

Daiyo Sawada
(Supervisor)

Alton T. Olson

Date: May 15, 1989

DEDICATION

To my Mother, Velma Mant
from whom I learned about perseverance

and

To The Memory of My Father, John McDonald
from whom I learned about patience

and

To my husband Wayne and our sons
Lorne and Brian
for their patience while I recursively persevered

ABSTRACT

The purpose of this study was to describe and explain the perspective systems of three teachers. Maturana's theory of living systems oriented and influenced the author during data collection and analysis. The method of recursive conversation was used to generate dialogue data.

Three teachers (a beginning teacher, a consultant, and an experienced teacher) were the sources for the data which were collected over a three year period.

The discussion of study results included implications regarding both preservice and inservice teacher education and suggestions for further avenues to explore with respect to teacher perspective and preservice and inservice education of teachers.

An epilogue which was a reflection of how the teachers and researcher were influenced by their participation in the study was included.

ACKNOWLEDGEMENTS

A project of this nature is never completed in a vacuum, nor without the support of many other people. Acknowledgements and gratitude are given for the co-operation, collaboration, and contributions made by others in order that this work could be completed.

Dr. Daiyo Sawada, my advisor and chairman of my supervisory committee, you deserve special credit for your patience, guidance, suggestions, and support and for introducing me to Maturana's theory; the perturbation has been inspirational. Dr. Alton Olson and Dr. David Sande, members of my supervisory committee, thank you for your valued critiques of both my proposal and drafts of this thesis and for your patience and encouragement throughout. To those who served as examiners for my candidacy Dr. Therese Craig and Dr. Margaret McNay, thank you for your thoughtful and thought provoking comments and questions. Thanks to Dr. Allen Vanderwell and Dr. Karl Tomm, who served as examiners for my final oral, for your many suggestions which recursively facilitated improvement of the final product.

Gynt Hodgson, Shirley Wichinski and Janice Jackson, thank you for reading drafts of the thesis and making insightful suggestions. Dr. Dwight Harley of the Statistical Services Unit, thank you for providing the computer graphics for figures. Judy Smallwood, thank you for the hours spent doing art work for the Iconic Metaphor figures.

Thanks also to several friends and fellow students who offered encouragement and support, they include: Bert Hall, Marie Hauk, Josephine Hoffman, Frieda Maaskant, Linda Maul, and Roberta McKay. To the staffs at the schools at which I did my research, thank you for your kindness and hospitality. Thanks to my colleagues in the Beginning Teacher Project, our many discussions provided much, rich food for thought.

To my mother-in-law, Heddie Halabisky, thanks for chauffeuring etc. when I couldn't. Thanks to my stepfather, Alan Mant, for staying committed to my mother through her illness and understanding that I couldn't be there as often as I would have liked.

A special word of thanks to my husband, Wayne and our sons, Lorne and Brian, for your continued love, support understanding and the many cups of tea.

Last, but certainly not least, a great deal of respect, admiration and appreciation is extended to Shirley, Ann, and Cathy for providing me with the opportunity to become a partner with you in some of the dimensions of your living. Without your participation, this study would not have been.

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CHAPTER I

BACKGROUND TO THE STUDY

Introduction

Schools and school systems are social organizations nested within larger social organizations. Teachers are an important part of these systems and their perspectives and actions determine, to a large part, what experiences children will have within the system.

How teachers view the system and their role with respect to the other aspects of the system (including such things as the curriculum, other teachers, the students, the principal, the school facility, the parents, the superintendent and the Department of Education) forms their perspectives and guides their thoughts and actions.

The concept of perspective has many connotations; therefore, I have used the broader term "perspective system." A perspective system is dynamic and ever evolving. Other authors use different words for the same or very similar ideas; Clandinin (1985) uses "personal practical knowledge" while Schulman (1986) refers to the attributes of "capacities, actions and thoughts."

Teacher development in the past has often been viewed within the framework of an input-output model with the written curriculum and preservice or inservice sessions being the input and expected teacher behaviors being the output. Information about the new curriculum was seen to be transmitted during preservice or inservice sessions. Teachers sometimes had the opportunity to practice (through repetition) behaviors they would eventually perform for their classes. They then, supposedly went forth with their new behaviors and the curriculum as input and the children's behavior became the output.

Teachers have not traditionally been thought of as having a professional body of knowledge (Lortie, 1975). This mode of thinking has been prevalent in previous teacher development/curriculum implementation models. The "failure to understand the teacher ~~as~~ an active holder and user of personal practical knowledge helps explain the limited success of curriculum implementation" (Clandinin, 1985, p. 364).

The three teachers in this study were seen as active holders and users of personal practical knowledge and the purpose of the study was to describe and explain their perspective systems. Two of the teachers, Shirley and Cathy, were classroom teachers of grades five and four-five respectively. The other participant, Ann, was a drama-language arts consultant.

Although a perspective system is an individual entity, its development takes place within a social context. I concur with Newberry (1979) that contextual setting field research appears "to be the most suitable method for a study involving a social process ... [as it] allows those in the situation being studied an opportunity to present the incidents and interactions of importance to their eyes" (p. 18).

Organization of the Written Reflection

Because the format of this thesis is not entirely traditional, it may be beneficial for the reader that I outline what may be anticipated in the following chapters. The remainder of this chapter gives a background to the study with a review of literature on teachers' perspectives, the significance and need for the study, purpose of the study and questions.

The biological theory of Maturana inspired and influenced me and was used as an orientation for the study. My interpretation of the theory is discussed in Chapter II.

The study was conducted in four phases which are described in Chapter III. Phase I was primarily participant observation, with an emphasis on observation. Phase II involved participant observation, with varying degrees of participation, and conversation. The conversations were often recursive because they were conversations about previous conversations. This aspect of the method is discussed in Chapter III. The domain of language of this conversation was teaching. Phase III again involved conversation using the language of teaching and Maturanian theory (Maturana and Varela, 1980, 1987).

Phase IV involved analysis of data and was oriented by my understanding of Maturana's theory and Chapter IV is the reflection of that analysis. Because of the breadth of data obtained and thought to be relevant to a thorough explanation of each teacher's perspective system, much dialogue has been included.

Chapter V is a summary of Chapters I through IV with the literature review being reinterpreted and that interpretation oriented by Maturana's theory. Also included in Chapter V and growing out of the study are suggestions for future research and implications for preservice and inservice teacher education.

Because of the mutually influential effect the participants and researcher had on each other, an epilogue has been included and is a discussion of how being in the study influenced us.

The study, on the most part, has been written in the first person as I felt this would serve to remind the reader that it is written from the perspective of the world which I bring forth.

Review of the Literature

Teacher Perspective

Several recent studies have used ethnographic methodology to pursue the concept of teachers' perspectives or personal practical knowledge.

Janesick (1978) is one researcher who used the word "perspective" and described it as "an ordered view of one's world.... a reflective socially derived interpretation of that which he or she encounters, an interpretation which serves as a basis for the actions which he or she constructs" (p.3). She goes further to say that a "person's perspective is a combination of beliefs and behaviors continually modified by social interaction" (p.3). Her case study of a teacher in his tenth year of teaching "revealed that the teacher's classroom perspective was characterized by a concern for creating, maintaining, and restoring a group" (p.7).

Everett-Turner (1985) used an ethnographic approach "to become familiar with the everyday happenings in the new teacher's world, as well as delve into the meaning these happenings had for each participant. [Since a teacher] is both affected by, and affects, the world into which she enters ... to understand what her world is really like we must try to uncover what she is experiencing, how she feels, and why she is doing certain things" (p. 307). Everett-Turner uncovered several themes in her study of three beginning teachers some of which were: "I'm a Real Teacher at Last," "Someone Cares," "Struggle for Control," and "Uncertainty Can Lead to Distress." Everett-Turner (1985) found that for "beginning teachers it is especially difficult to work out a balance between establishing enough control ... while at the same time providing their students with enough freedom" (p. 313).

Craig's (1985) study of a first year drama teacher identified six areas of influence: space, time, program assigned, administration, staff, and students assigned. The studies of both Craig and Everett-Turner influenced them regarding changes they could make in the curriculum and instruction courses they teach.

Studies cited by Feiman-Nemser and Floden (1986) looked at the apparent tensions created between teachers' perspectives regarding control of and closeness to pupils. This tension was evident with experienced as well as beginning teachers. They also cited interesting studies regarding teachers' choices for activities and the grounds for those choices.

> Researchers have portrayed teachers' knowledge as a mixture of idiosyncratic experience and personal synthesis. For example, Lortie (1975) argues that teachers lack a technical culture, a set of commonly held, empirically derived practices and principles of pedagogy. As a result, teachers must individually develop practices consistent with their personality and experience. Jackson (1968) also implies that teachers lack professional knowledge. Teachers, he argues, are content with simple explanations. They justify their teaching on the basis of feelings and impulse rather than reflection and thought.... The meanings they give to abstract terms are limited to the boundaries of their own experience....
>
> Lortie (1975) links the inadequacies of teacher education to the absence of a technical culture in teaching. If there is no knowledge base, then teacher education cannot transmit relevant professional knowledge. Sarasan (1982) ties the fact that teachers lack a shared body of practical knowledge to teacher isolation. (Feiman-Nemser & Floden, 1986, pp. 512-513)

Clandinin (1985) uncovered what she calls the teacher's "personal practical knowledge". This is knowledge which has arisen from a person's experiential history, both professional and personal and includes "circumstances, actions and undergoings which themselves had affective content for the person in question" (p. 362). Clandinin claimed that this knowledge can be discovered by observing actions of the persons and through discourse. Clandinin observed, participated with and interviewed two teachers in practice as "the study of teacher's personal practical knowledge begins in the study of practice ... and is revealed through interpretations of observed practices over time and is given biographical, personal meaning through reconstructions of the teacher's narratives of experience" (Clandinin, 1985, p. 363). Clandinin's "interest is in the imaginative process by which meaningful and useful patterns are generated in practice.... Practice involves ... the calling forth of images from a history ... [these images are] then available to guide us in making sense of future situations" (Clandinin, 1985, p. 636). Clandinin described how she came "to understand Aileen and Stephanie's classroom practices in terms of their experience as it could be seen to crystallize in the form of their imagery and as their imagery was embodied in their practice" (Clandinin, 1985, p. 367). Stephanie held an image of "classroom as home." Clandinin found that:

> the image of 'classroom as home' as it was expressed in the interviews and in the classroom subsumed various elements of the content of her personal practical knowledge. Knowledge of the instructional process; and knowledge of herself as a teacher and person; and knowledge of appropriate subject matter for primary school were all captured by the image. (Clandinin, 1985, p. 370)

The image gave perspective to new experiences as it drew:

> both the present and future into a personally meaningful nexus of experience focused on the immediate situation which called it forth. It reaches into the past, gathering up experiential threads meaningfully connected to the present. And it reaches intentionally into the future and creates new meaningfully connected threads as situations are experienced, and new situations anticipated from the perspective of the image. (Clandinin, 1985, p. 379)

What Influences Perspective?

Some studies have included a discussion of what does and does not seem to influence teachers' perspectives.

> -Typically the socializing power of the university is described as weak compared with the competing norms of schools; the argument that the effects of university socialization are 'washed out' by school experience is described (but not endorsed) by Zeichner and Tabachnick (1981).... Tabachnick, Popkewitz, and Zeichner (1979-1980) found discrepancies between program rhetoric and the messages university faculty give students in courses and in the field....
>
> Those entering teacher preparation have already had more interactions with experienced teachers than they may ever have again. (Feiman-Nemser & Floden, 1986, p. 520)

Craig (1984) described the complementary processes of preservice and inservice teacher education which share common tensions and concerns as part of a continual developmental process.

Feiman-Nemser and Floden (1986) reviewed some studies that discussed teacher development in the school context.

> Typically teachers work in isolation, although open-space settings do make their work visible. While they see one another in the lunchroom, in staff meetings, and throughout the building, teachers seldom employ these interactions as opportunities to discuss their work or to collaborate on shared problems.
>
> Commonly, lunchroom talk deals with politics, gripes, home life, and the personalities and family background of individual students, rather than curriculum, instructional content, or teaching methods (Mc Pherson, 1972). (Feiman-Nemser & Floden, 1986, p.509)

Newberry (1979), in a more recent study of beginning teachers, found that they usually developed close working relationships only with colleagues who, among other factors, shared a compatible teaching ideology and taught the same grade.

> A beginning teacher was working in a two-room pod with the movable doors open, sharing ideas, problems and materials with another teacher of her grade. A few months later, the experienced teacher left and another arrived. Cooperation and mutual assistance between the two teachers was cut back and the moveable doors were shut. This teacher's approach was too "structured" for the beginning teacher. However, she was looking forward to opening the doors again in the fall, when a new, more "open" teacher was expected to arrive. (Newberry, 1979, p. 25)

From these studies it is evident that many different interactions in their professional lives seem to influence teachers' perspective systems.

Perspective Development

There has been much research done on curriculum change but it usually looks at change in teacher behavior and pupil performance. Most of the change has been imposed with little regard for the context in which it is to be implemented. The disregard for the teachers' thoughts and feelings can be seen in statements such as "A basic assumption of our present research is that this variation in use by each individual innovation user must be behaviorally described and systematically accounted for if innovations are to be used with maximum effectiveness" (Hall, Loucks, Rutherford and Newlove, 1985, p. 5). Such studies place much importance on the amount of fidelity to the innovation.

> For teachers, as well as consultants and school administrators who see their roles as assisting teachers to implement proposals for new curricula, the identification of desirable end-points or goals for implementation, and stages of development toward those end-points or goals for implementation, and stages between the two, is a critical task. When stages between the two are clearly specified in terms of teacher activity, teachers and those supporting them can develop a clear understanding of the new curriculum, thus removing what has frequently been a major impediment of the new curriculum. (Leithwood, 1981, p 25)

In Fullan's (1982) book The Meaning of Educational Change there is a chapter on "The Teacher." In it he discussed and cited research and articles that discuss educational change from the teacher's perspective.

> One of the most respected and widely quoted studies of what teachers do and think is the one conducted by Lortie (1975).... His findings can be best summarized in point form.
>
> 1. Teacher training ... does not equip teachers for the realities of the classroom....
>
> 2. The cellular organization of schools means that teachers struggle with their problems and anxieties privately....
>
> 3. Partly because of the physical isolation and partly because of norms of not sharing, observing, and discussing each other's work, teachers do not develop a common technical culture....
>
> 4. When teachers do get help, the most effective source tends to be fellow teachers, and secondly administrators and specialists....
>
> 5. The greatest rewards mentioned by teachers were what Lortie labels "psychic rewards"....
>
> 6. One of the predominant feelings that characterize the psychological state of teachers and teaching is uncertainty--"teachers are not sure that they can make all students learn" (p.132)....
>
> 7. Of particular relevance to innovation, when Lortie asked teachers how they would choose to spend additional work time, if they received 10 hours per week, ... (most) selected classroom-related activities (more preparation, more teaching with groups of students, more counselling).... Secondly, the lack of time and the feeling of not having finished one's work is a perennial problem experienced by teachers. (Fullan, 1982, 109)

Sarasan (1982) found that many teachers with five or more years of experience "felt as competent as they ever were going to feel, and they verbalized no expectation that they would be teaching or thinking differently sometime in the future" (p. 197).

Fullan (1982) emphasized that change will always be a part of education and that teacher development will have to be a part of that change, but "if educational change is to happen, it will require that teachers understand themselves and be understood by others" (p. 108). He added that "implementation is a process of working out the meaning of change with those directly responsible" (p. 116), treating them as individuals who are going to participate in unique ways in interaction with each other and resource persons.

Boag and Massey (1981) claimed that teachers in the past have often been viewed as passive recipients of change. Their individuality has been either disregarded as nonexistent or ignored. "The classrooms they taught in were seen as essentially logical and predictable. Research in the area has sought to explain, control and predict teachers and classroom phenomena in a technological or instrumental sense" (p. 39). In their study of the perspectives of two teachers each of whom had more than twenty years experience, Boag and Massey found that, "For one teacher the implementation of the proposal confirmed previous judgments of the inappropriateness of curriculum development procedures. For the other it confirmed a lack of concern by theorists for the concerns and situations of the practitioner" (p. 53). The activities of both of these teachers, "it seems, are characterized by an autonomy which appears to minimize the effect of external influences on the classroom" (Boag and Massey, 1981, p. 37). This research penetrated what previous research failed to penetrate, "the mental world of the practitioner in order to reflect definition of needs, problem solving patterns, knowledge transmission strategies, criteria for appraisal of opinions, perceptions of experts, and other outsiders" (Sieber, 1974; Cited in Boag and Massey, 1981, p. 37).

Little (1982) studied the professional development atmosphere of several schools and found that schools which were the most adaptable had what he termed four "critical practices of adaptability." These practices are: support for discussion of classroom practice, mutual observation and critique, shared efforts to design and prepare curriculum and shared participation in the business of instructional improvement.

As can be seen "research on the cultures of teaching has begun to replace the image of a passive teacher molded by bureaucracy and buffeted by external forces with an image of the teacher as an active agent, constructing perspectives and choosing actions" (Feiman-Nemser & Floden, 1986, p. 523).

Clandinin (1985) felt that her research had at least two practical consequences.

> One is that with the concept of personal practical knowledge as a language and perspective for viewing school practices, we assume a stance which credits and values teachers' knowledge. A second is the formation of a different notion about the improvement of schools, a notion that builds on the personal practical knowledge of teachers by working with them rather than on or against them.

There is much we need to know about the development of teachers' perspective systems in order that we can best work with them.

Significance of and Need for the Study

Significance

A better understanding of the actual practice of teaching will lead to the development of grounded theories of practice. This will, in turn, provide a base for alternative modes of preservice and inservice programs for those striving to work more positively with teachers. This study could become part of "a Great Conversation, an ongoing dialogue among investigators committed to understanding and improving teaching" (Shulman, 1986, p. 9).

This study is significant in that it looks closely at three teachers' perspectives, or what Shulman (1986) and Feiman-Nemser & Floden (1986) referred to as teachers' practical knowledge:

> By opening up teachers' knowledge to inquiry, researchers are making a statement that the content of teachers' minds is worth investigating on its own terms. Studies of teachers' practical knowledge can greatly advance our understanding of teaching ....
>
> Because of teachers' position in the school hierarchy, their personal knowledge often carries less authority than more objective data. The teachers in Lampert's study, for example, felt that the school's preoccupation with standardized, impersonal measures made their deepest concerns seem solipsistic and their personal knowledge unreal. (Feiman-Nemser & Floden, 1986, p. 515)
>
> Research on teacher development seeks to describe and explain patterns of change in at least some sections of the teaching population. The term 'development' connotes internally guided rather than externally imposed changes. The image of teachers actively directing their professional growth is an added attraction for some investigators. (Feiman-Nemser & Floden, 1986, p. 523)

This study attempts to discover the nature of these internally guided changes and reflects the image of teachers as actively directing their own professional growth. It is a study of the nature of teachers' perspective systems.

Need

"Much school ethnographic research lacks a theoretical basis and results in superficial description that will have little effect on the conduct of ... education and the formulation of education theory having a high degree of explanatory power" (Chilcott, 1987, p. 212). "At present no full-blown theory of teacher development exists. The developmental approaches to the study of teacher change either stop short of linking developmental theory to teacher change, or describe teacher change without offering an encompassing theory" (Feiman-Nemser & Floden, 1986, p. 523).

Purpose of the Study

The purpose of this study was to describe and explain the perspective systems of three teachers. My understanding of Maturana's theory of living systems oriented this explanation.

Questions

The following questions rose out of the purpose and were not viewed as hypotheses to be tested but as guides for data collection.

(1) What are the perspectives these three teachers have toward teaching?

(2) How do these perspectives guide their actions?

(3) What has affected and continues to affect the development of their perspective systems?

(4) What aspects of these teachers' perspective systems remain invariant?

(5) What can recursive conversation offer to enhance the research?

(6) How can the theory of Maturana enhance the research done on teacher perspective?

CHAPTER II

THEORETICAL ORIENTATION

Preconceptions organize our perceptions; data is collected under the conscious or unconscious influence of preconceptions. (Dimen-Schien, 1977a) "No experimentation or observation has significance outside or can be interpreted outside the theoretical framework in which it took place" (Maturana and Varela, 1980, p.83).

Data collection and analysis for this study was influenced by my understanding of Maturana's theory. (Maturana and Varela, 1980, 1987) Before discussing my interpretation of Maturanian theory I will elaborate on the concept of "perspective system." By "perspective system" I mean what Shulman refers to as "capacities," "actions" and "thoughts".

> *Capacities* are the relatively stable and enduring characteristics of ability, propensity, knowledge, or character inhering in the actors, yet capable of change through either learning or development. *Actions* comprise the activities, performances, or behavior of actors, the observable physical or speech acts of teachers and students. *Thoughts* are the cognitions, metacognitions, emotions, purposes--the tacit mental and emotional states that precede, accompany, and follow the observable actions, frequently foreshadowing (or reflecting) changes in the more enduring capacities. Both thoughts and behavior can become capacities (in the form, for example, of knowledge and habits or skills). (Shulman, 1986, p. 7-8)

Capacities could be thought of as individual perspectives since "perspective may be conceptualized, not as objects external to and in some way independent of their participants, but rather as existing in some significant part in the consciousness and the belief systems of the participants themselves" (Tabachnick, 1981, p. 79).

How do perspective systems change? Although we complete or finish ourselves through culture we are not merely a photo-reduction of society. (Geertz, 1964) This study discusses the development of unique perspective systems. I now return to a discussion of Maturana's theory.

Maturana's Theory

Structural Determinism

Maturana and Varela (1980, 1987) discuss two aspects of systems which are important. They are organization and structure. "Organization" denotes the relations that must exist among the components of the system for it to be distinguished as a member of a specific class. "Structure" denotes the components and relations that constitute a particular unity and make up its organization. Two chairs may have different structures; that is, may be made up of different components with particular relations between them. However, they both belong to the class, chair, because they can be distinguished as having the same organization. (Maturana, 1987)

An important feature of the organization of a system is that it is stable. The organization must remain invariant in order to maintain the identity of the system; "if the organization of a system changes, then its identity changes and it becomes a unity of another kind" (Maturana, 1980, p. xx). The organization maintains stability through the mutual interconnection of processes and "this interdependence is the source of the system's identity as a concrete unity which we can distinguish" (Varela, 1979, p. 12-13).

Structure determined systems "undergo only changes determined by their ... structure that are either changes of state (defined as changes of structure without loss of identity) or disintegration (defined as changes of state with loss of identity)." (Maturana, 1978, p. 34) Organizational stability is maintained because the structure of the system determines what change occurs in the system. Perturbations in the Maturana/Varelian sense merely trigger change. They do not cause change. The structure of the system determines what change will take place. In addition, the structure of the system specifies what perturbations will indeed trigger change. There will, of course, be some interactions that will be destructive to the system. What interactions will be destructive are also structure determined.

Because the system is structure determined, environmental influences are perturbations rather than inputs or information to be processed or instructions to follow. (Varela 1987)

Living Systems

Living systems do not "pick up" information from nor are they instructed by the environment. They bring forth a world and specify what patterns of the environment will be perturbational and what changes will emerge. (Maturana and Varela, 1987)

This way of regarding living systems helps the observer move beyond simple cause and effect, input and output, determinism. A perturbing agent may trigger but not determine the course of transformation of a system; the course is determined by the structure of the system. (Maturana and Varela, 1987) If the autonomy of a system is stressed, "environmental influences become perturbations (rather than inputs) which are compensated for through the underlying recursive interdependence of the system's components" (Varela, 1979, p. 86).

Autopoiesis

Maturana and Varela (1980) invented the word "autopoiesis" ("auto"--meaning self and "poiesis"--meaning production or creation) to describe the central features of living beings. "This was a word without a history, a word that could directly mean what takes place in the dynamics of the autonomy proper to living systems" (Maturana, 1980 p. xvii). Maturana and Varela "use the word autonomy in its current sense; that is, a system is autonomous if it can specify its own laws, what is proper to it." (Maturana and Varela, 1980, p. 48)

Types of Living Systems

Living systems are of three orders. First order systems are simple cells.

Second order systems are formed from the structural coupling of single cells. "Coupling arises as a result of the mutual modifications that unities undergo in the course of their interactions without loss of identity." (Maturana and Varela, 1980, p. 107)

These second order systems "show a clear diversity of cellular types.... Structural changes that each cell undergoes in its history of interactions with other cells are complementary to each other, within the constraints of their participation in the metacellular unity they comprise" (Maturana and Varela, 1987, p. 79). The ontogeny of a metacellular organism is "determined by the domain of interactions that it specifies as a total unity, and not by the individual interactions of the component cells " (Maturana and Varela, 1987, p. 80).

If the interactions between two second-order unities are recurrent the result will be co-ontogenies with mutual involvement through their reciprocal structural coupling. Each unity will conserve its own adaptation and organization. If the two unities have nervous systems, a particularly complex third-order unity--a social system--will result.

Structural Change

Living systems of all orders form structural couplings with the environment (which includes other systems). Through this coupling, there is no progress or optimization of the use of the environment, only conservation of adaptation and autopoiesis. There is no survival of the fittest, merely survival of the fit. (Varela, 1987) Maturana (1978) calls systems capable of changes of state that involve structural changes in components second-order plastic systems.

The environment triggers change; it does not cause change in the organism; it is the structure of the living being that determines what change will occur. Changes emerge through structural drift that takes place in the encounters between organism and environment which operate independently. (Maturana and Varela, 1987) Autonomous unities "subordinate all changes to the maintenance of their own organization, independently of how profoundly they may be transformed in the process." (Maturana and Varela, 1980, p. 80)

Perhaps what I see as a physical example of structural drift will help explanation. Both a willow and aspen will change color in fall, the aspen, because of its structure, earlier than the willow. A willow, because of its supple structure, will bend and sway with a wind which is part of its medium, while an aspen will "whisper" because of its leaf structure. These are changes from an observer's point of view but are not changes from an operational point of view. However changes such as bending and staying bent with a late spring snowfall or roots going deeper when there is not much rainfall are examples of permanent structural changes from an operational point of view. These changes come about because the weather conditions triggers them and the structure of the trees permit such changes. Thus, the structure of each drifts as it interacts with its medium but the drift is determined by the structure. The structures change to maintain their conservation of adaptation. On occasion, the interaction with the weather conditions will be such that the tree will not be structurally capable of maintaining its conservation of adaptation and the tree may cease to exist.

Social Systems

A third-order structural coupling constitutes a social system. Social life permits individuals to participate in relations and activities that arise only as coordinations of behaviors between otherwise independent organisms. The coordination of behavior can take place through interactions of several forms: chemical, visual, auditory and so on. A common aspect of all third-order couplings is that they generate a particular internal phenomenology in which the ontogenies of components occur fundamentally as part of a network of co-ontogenies. A unity is a member of a social system only as long as it takes part in reciprocal third-order coupling. There is a diversity of third-order couplings in which humans can participate because of the complexity of their nervous systems and their operational plasticity. The degree of autonomy that components of metasystems have varies from minimum autonomy within organisms (formed from the structural coupling of cells which have virtually no dimension of independent existence) to maximum autonomy within human systems (formed from the coupling of persons who have many dimensions of independent existence). An organism's ontogeny depends on its components' operational stability whereas the ontogeny of a social system depends on its components' operational plasticity. (Maturana and Varela, 1987)

> The organism restricts the individual creativity of its component unities, as these unities exist for that organism. The human social system amplifies the individual creativity of its components, as that system exists for these components.... [there are some] human communities which, because they embody enforced mechanisms of stabilization in all the behavioral dimensions of their members, constitute impaired social systems. (Maturana and Varela, 1987, pp. 198-199)

Communication in Social Systems.

The behavioral coordination which can be seen during social couplings is communication. There is no input-output of transmitted information since participants in communication hear and say what they hear and say because they are structurally determined. The learned communicative behaviors that depend on the peculiar history of social interactions an organism may have taken part in are a linguistic domain. (Maturana and Varela, 1987)

Humans, in the linguistic coordination of actions, give rise to a domain of language during recurrent social interactions. We "language" when we make a linguistic distinction of a linguistic distinction or describe objects in the environment. (Maturana and Varela, 1987)

Maturana and Varela (1987) give, as an example of language use, the linguistic behavior of a chimpanzee.

> Perhaps this is precisely what Lucy was doing [making linguistic distinctions of linguistic distinctions] when, on the verge of throwing a tantrum because she saw her human "parents" leave, she turned to her keepers and signed "Lucy cry." Lucy and cry are linguistic items in this example; and through them she engages others in a linguistic domain they all share, wherein there is a linguistic distinction of an action performed. It seems to us, at that point, Lucy is languaging. (p. 215)

> Language enables those who operate in it to describe themselves and their circumstances through the linguistic distinction of linguistic distinctions. (Maturana and Varela, 1987, p. 210)

Through language we bring forth a world during co-ontogenic coupling with other human beings. Reflection, consciousness and description are thus possible. Language is not in the brain or nervous system but in the mutual coherences between organisms. (Maturana and Varela, 1987; Maturana, 1987).

I will digress at this time to provide what I perceive to be an interpretation of Maturana's theory through the use of a social example. A social system whose components include mother, father and child(ren) is a unity of a certain kind; that is, it belongs to the class--nuclear family. The structure of the system would change as structural drift is experienced by component members independently and by the system as a whole. As new children are added and as all individuals age, the system would still be called a nuclear family. Of course if an unplanned or unhealthy child were to enter the system, the system would be perturbed but would remain a nuclear family as long as the structural coupling continued.

However, if the structural coupling ceased, for example, if one of the parents were to exit the system, it would become a unity of another kind--a single parent family. Its organization would have changed from nuclear family to single parent family because the relations among the components would have changed. In addition, if a grandparent were to enter the system it would again become a unity of different kind--an extended family. If the structure of a system "changes so that its organization as a composite unity changes, the identity of the entity changes and it becomes a different composite unity--a unity of a different class to which we apply a different name" (Maturana, 1978, p. 33). Note that at a different level of analysis the observer may say that all belong to the same large class--family--because they all have the same underlying organization; that is, certain relations among adults and children living in a household which we recognize as "family."

"Maturana argues that 'no human being can be effectively replaced' in a given system simply because no two human beings are identical" (Zeleny, 1985, p. 125). I tend to agree with Maturana. However, Zeleny disagrees and says that "this is a weak argument because what is striking and important about natural social systems is their ability to maintain identity, continuity and autonomy in spite of (or because of) a substantial turnover of human members" (Zeleny, 1985, p. 125).

There are two points to be made here. Firstly, it depends on the distinctions made by the observer whether the unity appears to be the same. One child families are different from multiple child families even though they may all be observed to be nuclear families.

Secondly, from the observer's point of view, the unity may appear to be the same but; clearly, from the point of view of component members, there will be a difference. I am sure persons who have experienced the divorce of parents and the replacement of one by a stepparent would agree that the system is not only different but a unity of different kind. So how a system is defined is determined by the distinctions made by a particular observer.

Although the above discussion could be expanded, its purpose was to briefly give my interpretation of Maturana's theory within the social realm. Within the social-psychological realm, the theory may shed light on the study of perspective systems.

Perspective System

As mentioned at the beginning of this chapter, the meaning of perspective system includes: capacities - the relatively stable abilities, propensities and knowledge; actions - behavior of the actors; and thoughts - cognitions, metacognitions, emotion and purposes. (Shulman, 1986) These are mutually influential and ever evolving. One's perspective comprises an ordered view of one's world and is a socially derived set of beliefs and behaviors which is constantly modified through social interaction. (Janesick, 1978) That is, some interactions, within social systems are going to trigger changes in the perspective system. According to Clandinin (1981), one makes sense of new situations by calling forth an image. This "image" is similar to Shulman's "capacities" as both are relatively stable.

The interactions which seem to trigger the most change are those with fellow teachers (Lortie, 1925) who have compatible teaching ideologies (Newbury, 1979) rather than interactions at university (Tabachnick, 1981). Little (1982) described the social system (kind of school) in which change is best facilitated as being a school where sharing and discussion is encouraged.

One's perspective system is influenced by experience. This study looks at the past and recent experience of the three teachers in order to divulge what, from this observer's point of view, appear to be capacities (stable aspects) and what interactions seem to have triggered change in actions and thoughts.

CHAPTER III

METHOD

The method used in this study meets the four criteria of ecological educational research emphasized by Hamilton (1983): (1) attention to the *reciprocal* interaction between people and their environments, (2) treatment of the learning process as continuously *interactive* rather than the isolation of "cause" and "effect" factors, (3) consideration of the classroom context as nested in other social organizations, and (4) treatment of the attitudes and perceptions of actors, in addition to observable actions, as valuable sources of data.

This study was conducted in four phases which are outlined in the sections following. Note that, although these four phases are delineated herein, another observer may have difficulty saying what phase we were in at any one time. Indeed, during analysis, I may have gone back to the teacher, and the interview could have been a Phase I type interview even though the research had already progressed to Phase IV.

Phase I

The first phase of the study involved interviews with the teachers regarding their personal and professional backgrounds, observations of the teachers as they taught and interviews regarding their reflections on observed behaviors. There was very limited participation in the classroom activities by me during this phase as my role was simply observer.

The study was conducted under the premise that if we want to understand the behavior of people, we must first understand their cultures and their perspectives of those cultures. Educational researchers have borrowed a research tradition, ethnographic field work, in order to further understand the culture of schools. Ethnomethods involve a variety of techniques of data collection. Data from a number of sources, triangulation, is a method which ensures disciplined looking and reflecting (Guba, 1981; Janesick, 1978; Spradley, 1979). Triangulation in this study was used, not with the assumption that "the truth" would be found, but merely to see if there was coherence between the behavior and the acts (see below) of the subjects and a consensus within the social systems of which the subjects were participants.

> By behaviors we mean the changes of a living being's position or attitude, which an observer

> describes as movements or actions in relation to a certain environment.... [It] is not something that the living being does in itself (for in it there are only internal structural changes) but something we point to. (Maturana and Varela, 1987, pp. 136,138)

> Acts are distinguished from behaviors in that, while behaviors are overt and may be objectively observed and counted, acts imply purposeful constructions on the part of an actor that can be understood only from the actor's point of view. (Smith, 1987, p. 176)

Conversations flowed from observations and new ideas emerged.

> The fundamental cognitive operation that an observer performs is the operation of distinction. By means of this operation the observer specifies a unity as an entity distinct from a background and a background as the domain in which an entity is distinguished. (Maturana, 1980, p. xxii)

Once the distinction is made, the observer may choose to emphasize either the environment or the entity. If the environment is emphasized, attention is paid to regularities in the interaction between the environment and the entity, with the environment being viewed as a source of constraints. If the entity is emphasized, then the entity is brought to attention and the environment is viewed as a source of perturbations rather than constraints. (Varela, 1979)

I have chosen in this study to focus on three teachers with their physical and social environments as background. The three teachers were the key informants but other teachers, staff, parents and students were also involved in order to come to a further understanding of the contexts of the situations. Also used were documents like curriculum guides, report cards, text books, notes to parents and school handbooks.

Since I have been a teacher, the "passive phase" of adjusting to the situation was fairly short allowing me to enter quickly into the "active phase" of obtaining pertinent data (Frielich, 1970).

Geertz (1964) discussed the delicacy it takes to grasp concepts which for others are "experience near" and to do so well enough for them to illuminate the theory being developed. He said it is "at least as delicate, if a bit less magical, as putting oneself into someone else's skin" (p. 224). The three teachers involved in this study were very articulate and open; therefore, I was able to grasp the "experience near" perspectives of the teachers.

In order to remain loyal to the method, a constant monitoring and testing of my reactions and searching for negative instances to test and modify theories being developed was necessary.

> On establishing truth value, then, the naturalistic inquirer is most concerned with credibility of his findings and interpretations with the various sources (audiences or groups) from which data were drawn. The testing of credibility is often referred to as doing "member checks", that is, testing the data with members of

> the relevant human data source groups. (Guba, 1981, p. 10)

Field notes were made during this and the second phase. These notes formed a large portion of the basis for interviews. It was important during the observations that I fit into the routine of the classroom as much as possible in order to be unobtrusive. (Werner and Rothe, 1979) Because of the differences among the three situations and experiences and personalities of the teachers, actions considered unobtrusive in one situation may have been obtrusive in another; therefore, I tried to read each situation and follow the cues of the teachers in order to fit in.

Topological representations of Phase I are in figures 1a and 1b. I am on the left while one of the teachers is on the right. I am diagrammed as merely an observer (the eye) for the first part of Phase I. For the first while I only observed and interviewed, with the interview questions being questions regarding the teachers' personal and educational backgrounds and their involvement in the schools. For the second part of Phase I, although we interacted more (shown by the horizontal arrows) the conversational system was somewhat limited. Two conditions limiting the system were the fact that the research had just begun and the amount of initiative allowed the teacher within the conversation. During Phase I, most questions were generated from my observations; therefore, there was a starting position on the conversation even though I tried to pose open-ended questions.

Phase I

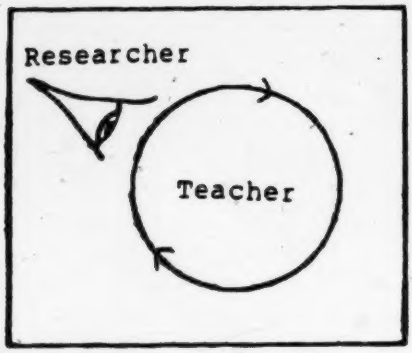

Figure 1a

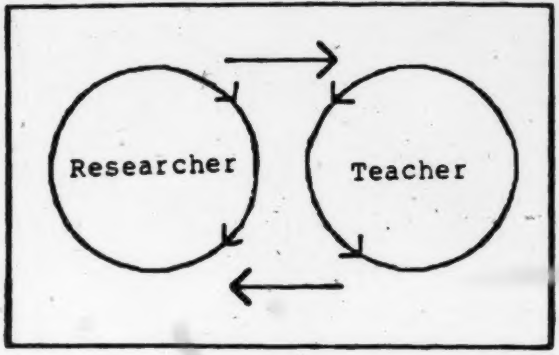

Figure 1b

The interaction of components of the perspective system (perceptions, thoughts, and actions) within each person is shown by the circular arrows. During Phase I, questions like: "Could you please describe your educational background?" or "Why are all your mathematics sessions in the morning?" were asked. Although these were not meant to influence a way of responding, it is possible the very asking of them may have done exactly that.

Phase II

If we look at a study participant as autonomous rather than one who uses inputs for growth and development, the researcher may take on a more participatory role. (Varela, 1979) That is, the researcher and participant may form a social system.

> From Malinowski came the insistence that intensive involvements with the (real) natives in terms of their culture was a necessity in field work. He stressed that such research would enable the investigator to demonstrate that man (even in "savage" societies) was not a puppet on cultural strings, but a decision maker who at times opted to go against cultural rules and to accept the sanctions such behavior called forth. He argued that without an intensive involvement with the native it is not possible to understand local meanings, functions, and structures. (Dimen-Schien, 1977a, p. 11)

The perspectives of two people (one of who may be a researcher) are, thus, mutually enhancing when the two are engaged in conversations from which emerge new ideas and relationships. Text can also influence one's perspective as one is in dialogue with it. Craig (1985) had this experience with her work.

> The study which was emerging over a three-year period was a work in my life. It had an energy of its own, both physical and psychic, which came from and generated a strong inner relationship with me as researcher.... Several different dialogues emerged during the months of data collection--dialogues with the work itself, with the process, with one of the themes, with informants in the study, with advisor and committee members, and with events which occurred.... Through the dialogues, crystallizations emerged which brought new

> awareness about the study and about myself as researcher. (pp. 10-11)

The process of emerging new awareness or crystallization could be thought of as the process of reflection and the product a reflection. Maturana's theory strongly influenced the reflective process in this study.

Participant-observation was used during the second phase of the study and the degree of my participation was influenced by the actions of the informants.

In addition to this, we had conversations which sometimes were recursive. A conversation may be considered a recursive process or a recursive conversation if the conversation is about aspects (results, products or consequences) of previous conversations in the conversational process. Representational "snapshots" of an ongoing conversation, which may be interrupted are used below to illustrate the recursive nature of a conversational system.

The array, C[n], below is such a snapshot and denotes a conversation at state [n] between A and B, both at state [n-1]. The letter "n" is merely used as a counter and [n-1] is the state previous to state [n].

$$\begin{bmatrix} A[n-1] & A(A[n-1]) & A(B[n-1]) \ldots \\ B[n-1] & B(B[n-1]) & B(A[n-1]) \ldots \end{bmatrix} \text{------>} \quad C[n]$$

With respect to the conversation which is at state n, persons A and B at state [n-1] are products of the interaction C[n-1] between A and B at state [n-2]. That is, a recursive conversation at any state is applied to the cognitive worlds brought forth from previous conversations between the participants. That cognitive world for A consists of A[n-1], A at state [n-1]; A(A[n-1]), the triggering effect A has on herself at state [n-1] and, finally, A(B[n-1]), the triggering effect of B at state [n-1] on A at state [n-1]. A similar world is brought forth by B. The self-awareness, denoted by the composite function A(A[n-1]), is what is necessary for reflection to take place. There is also other-awareness, denoted by the composite function A(B[n-1]). The representation here is simplified. Indeed other components could well have been included as indicated by the ellipses. These other components might be something like A(B(A)), the perception on A's part of the triggering effect she thinks she is having on B; or A(A(B)), A's interpretation of the triggering effect B is having on A. Including these would perhaps give a more accurate representation of the dynamics of conversation, but for the purpose of the discussion here the reader should just keep in mind that there are more things going on in the conversation than are represented by the simple array above.

The recursive nature of the conversation becomes evident when we look at the conversation in a series of states, showing how one state of the conversation is applied to a previous state of the conversation. Here, the arrays may be seen to be snapshots of the conversation as it evolves over time. The notation can be simplified by dropping counters on the individual components of the array and putting a single counter outside the array and by dropping the ellipses.

$$\begin{bmatrix} A & A(A) & A(B) \\ B & B(B) & B(A) \end{bmatrix}_{[n-2]} \text{----}\!\!> C[n-1] \qquad \begin{bmatrix} A & A(A) & A(B) \\ B & B(B) & B(A) \end{bmatrix}_{[n-1]} \text{----}\!\!> C[n]$$

$$\underset{\text{drift}}{\xrightarrow{\hspace{25em}}}$$

If another person were in the conversation it would be denoted as below:

$$\begin{bmatrix} A & A(A) & A(B) & A(C) & A(B(C)) & A(C(B)) \\ B & B(B) & B(A) & B(C) & B(A(C)) & B(C(A)) \\ C & C(C) & C(A) & C(B) & C(A(B)) & C(B(A)) \end{bmatrix}_{[n-1]} \text{-----}\!\!> C[n]$$

The composite function A(B(C)) is the triggering effect on A of the interpretation A gives to the triggering effect C seems to have had on B (from A's point of view). Note that some of the components of the array may be zero; that is, have no apparent effect on the next cognitive state of a participant. For example, B may not be distinguished as triggering any change in A, in which case A(B) would be zero. Or the interaction between B and C may not be distinguished as triggering any change in A; in which case, A(B(C)) would be zero. Actually zero components would effectively make a difference since if such a condition (existence of zero components) were to carry on for long, the conversation would cease to be because the participants would see no reason for continuing it.

The organization of a system specifies which relations must exist to make a unity a member of a certain class. If its organization changed the conversation would become a unity of another kind. For example, a conversation would be distinguished as a traditional lecture, Lec, if it took on the form below, where the component A(B) is missing.

$$\begin{bmatrix} A & A(A) & \\ B & B(B) & B(A) \end{bmatrix}_{[n-1]} \text{----}> \; Lec[n]$$

It could possibly be said that this is no different than when A(B) = 0, but a lecture, by traditional design, is as above, whereas what we distinguish as conversations are not. However a conversation would not exist for any length of time with many zero components. It would soon disintegrate or become something else, perhaps a monologue, lecture or tirade.

If the phenomenal domain under consideration is the research process itself, it is a recursive process since it involves coordination of the coordination of interaction between the teacher and me. Those interactions would involve observations, reflections about observations or conversations. They would, in turn, all be part of the recursive research process as that process is applied to them.

The explanation in the above digression was to serve the purpose of both clarifying and specifying the nature of recursion. In general a process is recursive if there is an application of the process upon the results, products or consequences of that same process.

As in Clandinin's (1985) study, the ongoing study and its results were reflected on by the participant and researcher.

> As researcher, I cannot enter into a teacher's classroom as a neutral observer and try to give an account of her reality. Instead, I enter into the research process as a person with my own personal practical knowledge. My knowledge of teaching interacts with that of my participants. Inevitably, the data collected reflects my own participation in the classroom and my own personal practical knowledge colors the interpretations offered.... The meaning created in the process of working together in the classroom, of offering interpretations and of talking together, is a shared one. Neither teacher nor researcher emerges unchanged. (Clandinin, 1985, p. 365)

During this phase of the research, if the teacher appealed to me for information in a collegial role, I responded. Also, I offered suggestions, in the form of questions, for the teacher to consider.

At this time, several aspects of the teachers' perspectives became evident as being invariant. Triangulation (Guba, 1981) was used in order that I could justify such a distinction.

Diagrammatically Phase II looks like figure 2. I am on the left while the teacher is on the right.

Phase II

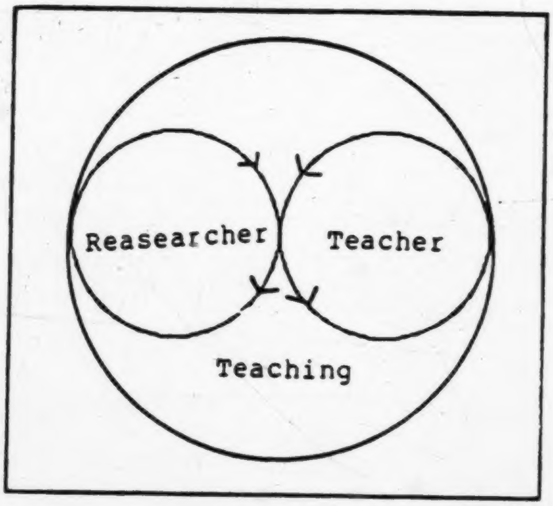

Figure 2

The relationship here is to be considered as a social dyad in which we were mutually influential.

There was mutual adaptive interplay between teacher and researcher. Although we each maintained our individual integrity, both of our perspective systems were influenced by the conversation since we were coupled within the domain of the conversation.

This is shown by the two circles touching. (Note that this is slightly different than the icon used by Maturana and Varela (1987) to represent coupling.) The conversation was about my observations of teaching, teaching in general and about previous conversations of both. In the diagram this is all referred to as teaching. The coupling arose as a result of mutual modifications during the interaction without loss of autonomy. Since the autonomy of each person was stressed, our effect on each other could be considered as reorienting influences (rather than inputs).

In a discussion about the naturalistic paradigm, Guba (1981) said "the inquirer and the respondent ... are interrelated, with each influencing the other" (p. 3). Tabachnick (1981) also discussed this mutual influence.

> A conventional model for studying dynamic events treats these events metaphorically, as though they are objects which can be manipulated, fragmented, controlled, and shaped into meanings which are both unchanging and everywhere understood. So far, the discussion has sketched the outlines of an alternative concept of a dynamic social event, one in which qualities of embeddedness and pattern interact with qualities of becoming and actions which are unanticipated. The subjective views of the participants (including the researchers who study the event) are an essential element of the event. They are not an impurity to be neutralized or removed; they are the component of the event which infuses it with the meaning it will come to have in the broader flow of human events. (p.83)

Phase III

Diagrammatically Phase III looks like figure 3. At this time the teacher to the right was either Ann, the consultant, or Cathy, the experienced teacher.

In phase three, I made continued use of the dynamics of the recursive aspect of the research process, in order to explore the perspectives of the experienced teacher and the consultant. The conversations in this phase involved teaching and our discussions of Maturana's theory.

Phase III

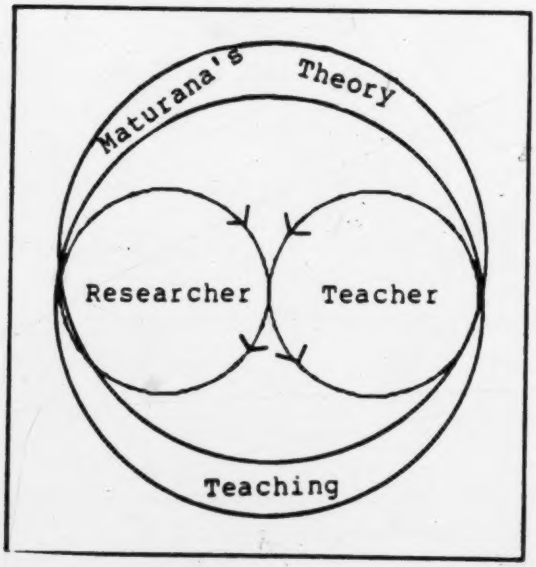

Figure 3

My conversations with Shirley, the beginning teacher, were Phase I and II level interactions with none occurring at the Phase III level. The beginning teacher was one of fourteen beginning teachers involved in a case study project on perspectives of beginning teachers. Some of the data collected in my interactions with her were used for that case study. The agreement in the research group for that project was that researcher participation would be limited. However, the definition of "limited" ranged from just observation to some participation, usually in the form of the researcher acting as a teacher assistant. The only time my participation went beyond this was late in the project when, at the request of the teacher, I supervised ten students doing and discussing a science experiment.

My conversations with Ann and Cathy moved quickly to the Phase II level. Ann's involvement with Maturanian theory was through a preliminary draft of my interpretation of the theory; therefore, our conversation at the Phase III level was somewhat limited. Cathy was involved with the Maturanian theory for a study she was pursuing; therefore, our conversation was more involved.

Both Ann and Cathy have lived and taught longer than has Shirley; they thus have had a longer period of time to reflect on lived experiences. Both have done graduate work in education; the reflections, therefore, quite naturally included the theoretical language of teaching.

Since some form of reciprocity is often essential in gaining and keeping acceptance (Glazer, 1972), I hoped that the teachers in my study would experience some benefit from their involvement in the study as was evidenced by a teacher in Craig's study who said, "I know you appreciated my letting you come in but I really appreciated your being here because it's been like a moral support" (Craig, 1984, p. 271). As was expected, there was a different kind and degree of reciprocity expressed by each of the three teachers in this study. They speak of this in the epilogue.

At all times I had what I considered the best interests of the teachers in mind, being cognizant of Glazer's (1972) admonition that "the highest value, then, is concern with the well-being of the respondent and not the accumulation of desired data" (p.95).

Phase IV

During phase four, I was involved in analysis of the conversations from phases one through three. My understanding of Maturana's theory oriented this analysis.

Iconic Metaphor

I have chosen the art work of M. C. Escher (with adaptations) to assist in the explanation of the conversational process.

Phase I was primarily observational. Had the study been written after Phase I the process would look like Figure 4 and the product (reflection) like the drawn hand in Figure 4. The researcher would have

Phase I

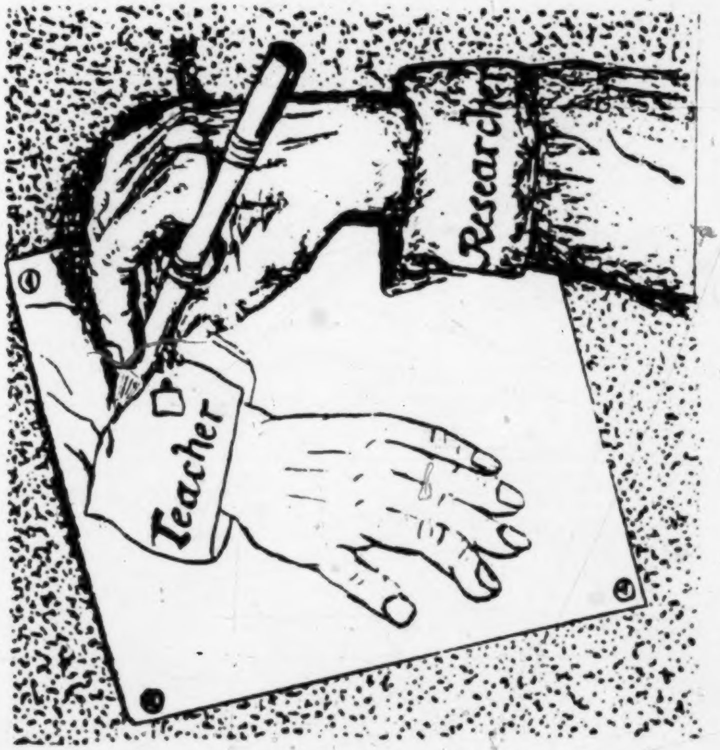

Figure 4

Adapted From Drawing Hands 1948 M. C. Escher
© 1988 M.C. Escher Heirs/Cordon Art - Baarn - Holland

given a rather "flat" rendition of the participant, mostly from the point of view of the researcher, and the researcher would have been little affected in the process.

Phases II and III are illustrated by Figure 5 and although no reflection is represented here reflection did exist. The conversation may have gone through several states during each of several sittings with each person influencing the other.

Phases II and III

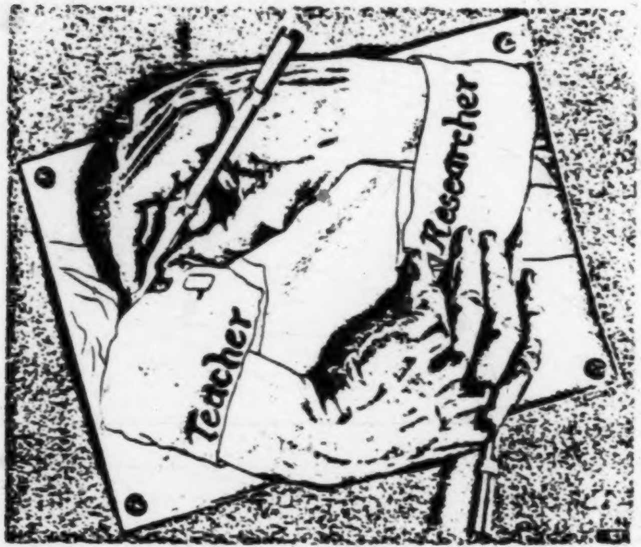

Figure 5

Adapted From Drawing Hands 1948 M. C. Escher
© 1988 M.C. Escher Heirs/Cordon Art - Baarn - Holland

Phase four is depicted in Figure 6. The product/reflection (this written study) is shown in the lower portion of the figure. The teacher's hand is shown in less detail than is that of the researcher because one can never truly "put oneself into someone else's skin." Also, the reflection of the researcher's hand is less detailed than is the "real" researcher's hand. Therefore, the reflection being shared with the reader here will have less detail (life) than did the actual process and the participants in the process. If three dimensions were available on paper, the effect the whole process had on me could perhaps be shown.

Phase IV

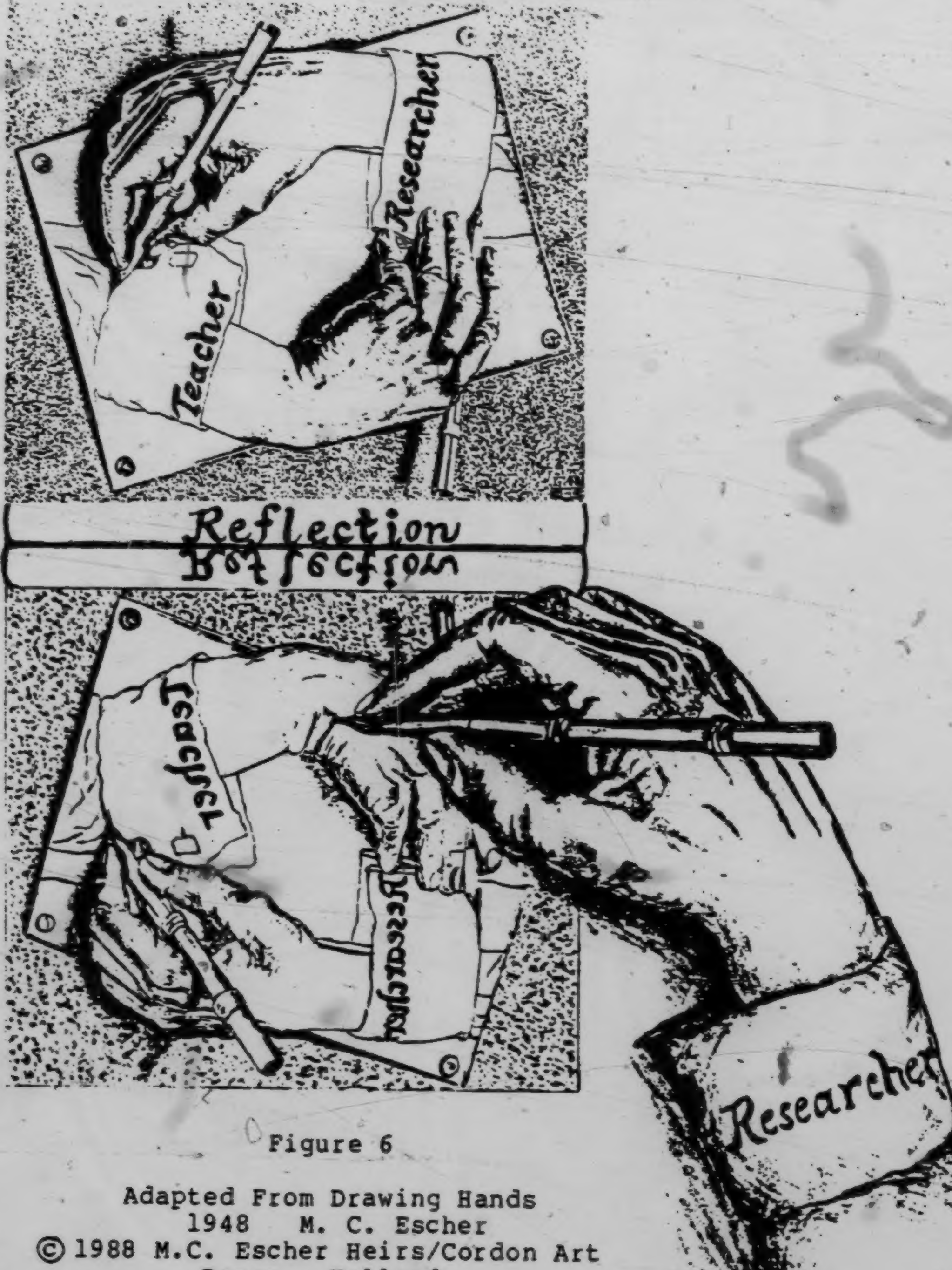
Researcher
Teacher
Reflection
Researcher

Figure 6

Adapted From Drawing Hands
1948 M. C. Escher
© 1988 M.C. Escher Heirs/Cordon Art
Baarn - Holland

Data Analysis

I conducted primary data analysis concurrently with data collection and further data analysis on completion of collection. The data for this analysis came from field notes of observations, taped interviews and documents.

Throughout the analysis, I was oriented by the theory of Maturana as themes emerged. As Tabachnick (1981) suggested, I did not force the action to fit preestablished categories. Themes were allowed to emerge and were "open to change and development as a result of encountering the action being studied" (Tabachnick, 1981, p. 84).

Once themes emerged, further analysis was done within themes. A model of conversation, already presented, and a similar model of learning presented below were used to illustrate themes. The array L[n] denotes the process of learning interaction between A and the environment, E, first at state [n-2] (on the left) then at state [n-1] (on the right).

$$\begin{bmatrix} A & A(A) & A(E) \\ E & E(E) & E(A) \end{bmatrix}_{[n-2]} \text{--->} L[n-1] \qquad \begin{bmatrix} A & A(A) & A(E) \\ E & E(E) & E(A) \end{bmatrix}_{[n-1]} \text{---->} L[n]$$

The component E(A) in the array above is of special interest in that it is the change triggered in the environment as A is learning. This could be considered a by-product of the learning. Examples would include such tangible things as a sculpture, a wooden bowl, or a poem; but could also include less tangible things like a win of a game or growth in school spirit. It also could be things which might be destructive to a specified environment. Nevertheless, the learning is a recursive process since the learning process is again applied to these products.

Entry to Field

I entered the beginning teacher's classroom via a project in which I was involved. The project, conducted by several faculty and graduate students in the Department of Elementary Education, entailed the study of the perspectives of several beginning teachers. A project manager sought admittance to these teachers' classrooms through the superintendents and principals. Entry to the experienced teacher's classroom and the consultant's workshops was sought by a direct appeal to them and formalized later through the channels of field services, superintendents, and principals.

Interviews

During the first interview with each teacher, I explained the study and answered any questions the teachers may have asked.

The explanation below by Werner and Rothe (1979) covers the topic of how to conduct a sensitive interview.

> Dress and vocabulary need to be representative of the situation. Individuals more easily talk with those who appear to share interests, thereby making in-depth responses more likely.... Since the interview is itself a social interaction, sensitivity to familiar social conventions is necessary to relax the interviewee and gain in-depth information.... Sensitivity to annoyances, emotions, and excitements allow the ethnographer opportunities to change or reinforce questions. Ample time should be provided the interviewee to expand on matters relevant to him....
> Open-ended questions draw discussion, impose little restriction on respondents, present opportunity for conversational flexibility, and maximize expression. In addition, open-ended questions allow interviewer flexibility for greater probing with secondary questions which clarify answers and elicit further responses about peripheral points of interest. Although the interviewer brings several pre-defined questions, their timing is dependent on factors, such as interviewee nervousness, relationships between parties, and sensitivity to the moment. (p. 63)

All interviews were audio-taped and transcribed on microcomputers shortly after the interview in order that we could come back to the material during subsequent interviews.

CHAPTER IV

THE THREE TEACHERS

The Researcher

"Unlike the model experimenter, the qualitative researcher is not a faceless replicate" (Smith, 1987, p. 175) and because perspectives influence perceptions, I will introduce myself before I give accounts of Shirley, Ann and Cathy. I was born and educated in Edmonton receiving a B.Ed. and M.Ed. in secondary mathematics from the University of Alberta.

I taught mathematics and physical education at the junior high level and was involved in many extracurricular activities. I am married and have two boys (born 1972 and 1974). I have been active in community and school volunteer work during the last several years.

I started my career teaching by having much structure, was excited by the "behavioral objectives" movement and used a more intuitive approach in my last years of teaching. At this time I feel a tension between the teacher needing control and the students needing freedom, between the teacher being accountable to Alberta Education Curriculum and the feeling that much of the curriculum is too prescriptive.

Because I was educated in, taught in, and now have children attending the Alberta public school system, I am sure I have biases and ways of viewing the system that "strangers" may not.

The Three Teachers

Who is Shirley, Ann or Cathy, how do they see and think about their teaching worlds, how do they act in these worlds? If I can open doors for the reader to see the answers to these questions, I will have enlightened the reader regarding the perspective systems of these three teachers. Although a perspective is dynamic, it is possible to take snapshots which capture it at given moments. These snapshots can then be used to describe which aspects of the perspective system remain fairly constant over time and which are ever evolving.

Since thoughts, actions and perceptions are all components of a perspective system, I have used all of these to exemplify the perspective systems of the three teachers. (See Chapter II pages 19-20 and 31-32 for a discussion of perspective system.) In the following discussions I have attempted to let the reader get to know the teachers by identifying recurrent aspects in their perspective systems and by exemplifying these with reference to field notes, transcript data or documents. In order to make the account as concise as possible I have used only a few examples and have paraphrased some of the transcript data while making sure the essence of what was said was not altered.

Dates in parentheses refer to when data was collected, be it field notes or interviews. Documents are dated as to when they were written. For example: (86,09,24) refers to an interview held on September 24, 1986; while (Field Notes: 86,09,24) refers to field notes that were made during observation on September 24, 1986.

Interpretations are interspersed throughout the descriptions and are shown in braces, {...}, and single spaced. Quotes are also single spaced and indented, while comments made by me or to clarify the quotations are enclosed within the body of the quotations in brackets, [...].

Shirley

Shirley's Biography

Shirley, in her mid-twenties, is an attractive young lady with a warm personality. A graduate of the University of Alberta's Elementary Education "Generalist" B.Ed. program, with a minor in movement, Shirley brings to her profession an interest in recreation type activities. Her work experience included teaching swimming and skating and working at day camps and as a day care director. Her husband of four years is employed outside the teaching profession but is "excellent with kids and super supportive" (86/12/10).

Shirley is the oldest child in a family of two girls and a boy and wanted to be a teacher since grade nine. As a youngster and young adult she was involved in activities like choir, a church youth group, baseball, swimming and skating. She enjoyed these activities because both her "mom and dad were always encouraging and positive, and still are. They were very involved and very well liked by others and were not only encouraging for us kids but to the other kids" (86/11/16).

Shirley finished her B.Ed. program in December, 1983 and immediately applied for teaching positions.

She first did substitute teaching and then held the position of director of an after school care program. She declined a teaching position because it was too far to commute but accepted a closer interning position and interned for four months before teaching grade one for six months. The following year, at the time of my observations, Shirley was at Spruce Ridge School teaching grade five.

{The significant others in Shirley's childhood were both positive and encouraging. Shirley's early and later involvement in extracurricular and work activities were conducive to learning how to be successful in social interactions. There is coherence in all of these activities; they are all "people" oriented.

There is a definite coherence in the interaction between Shirley and her husband. He is supportive of her profession and she would not allow commuting to interfere with her primary social system (husband/wife).}

The School Setting

Spruce Ridge School, in its ninth year of operation, is situated in a quiet residential area adjacent to a park and has been in the present warm yet functional facility for six years. A middle class community contributes to the student population of approximately 340 which consists of classes from kindergarten to grade six. A principal, 16 teachers and one and one half aides make up the teaching staff.

Included in the school handbook in the section on discipline is: "We believe that one of the best ways of achieving good student conduct is to support good behavior. Courtesy and consideration for others are our main guidelines.... Every effort is made to maintain a harmonious environment through in-school counselling and communications."

The Classroom

Shirley's twenty-one grade fives were greeted the first day of school by a bulletin board which asked the students to "Sign up for Grade Five Here" and another bulletin board on which were 21 purple balloons, each with a name of a student on it. This display had the heading "We're a Grape Bunch."

The facility is a bright, roomy, clean and cozy carpeted area which opens out into the library area. There is ample bulletin board space on which Shirley displays student work or items pertinent to the current activities. The children sit on chairs at one person tables or at trapezoidal tables which fit together for small group work.

{Shirley seems to have been setting up a climate which will be conducive to nurturing a group feeling with her welcoming September bulletin boards.}

Shirley's Teaching

The first day of observation in Shirley's class was the second day of school. Shirley introduced me to her class and indicated that I could sit at the tables at the side of the room. (Field Notes: 86,09,03) That was my position for most of the observation sessions although, as time went on, I did have limited interaction with the children.

Well Planned.

One of the first things I noticed was that Shirley had everything in order and was well planned. She taught using her written plans and usually had advance organizers on the chalk board for the children when they came in. (Field Notes: 86,09,24) Her teaching methods may have been influenced by the way she felt she best learned.

> [Commenting on organization in general] Well organization is important to me; time management has always come easy to me. I am able to do 20,000 things and still get them all done. (88,04,07)
>
> [Commenting on university] Profs who were organized and laid out the expectations and what they wanted and everything they wanted done was labeled and listed and this is what you are going to get from this course. That is what I got from the course and I got a good mark. (88,04,07)
>
> [Shirley's timetabling decisions are based on what is important in the prescribed curriculum and to fit in with the school timetabling, eg. P.E. Music, French, recess.] Language Arts and Math

> are the most important; they have the most minutes. I have health right after P.E. because I find that a lot of the concepts in Health tie in with P. E. The core is the MUST MUST, the things a child MUST know to be able to go on to the next level. There are only the "have to knows" in my year plans, I don't have any nice to knows in my year plan. I can have nice to knows in my unit plan because I might do some other things that go along with these. (86,10,22)
>
> I find myself pressured to get through the curriculum because there's a lot of extras like Christmas concert, assemblies, and staff meetings. I worry mostly about Language Arts and Math. (86,12,10)
>
> [Commenting about her teaching style:] I am totally planned, and I think I always will be because you have to be accountable. I will probably use plans again that I know have worked well. (86,05,21)
>
> [Regarding her daily lesson plans:] We were told we had to have our objectives written out, "the learner will", and they expect us to do sponge activities. We were told how to and expected to, and it actually does work.... It's a lot easier to do lesson plans that way because it is easy to evaluate. They either can do it or they can't and if they can't you have to do some more (teaching). (86,10,15)

(Since Shirley has always been involved in many activities, having her life in order necessarily became part of her perspective system. If professors told her what she had to learn it was more time efficient, as she could learn that and get on with other things rather than "waste" time deciding what was important.

Many teachers feel they must literally adhere to curriculum guides. Indeed most curriculum guides are based on the Program of Studies, which is a legally binding document. The curriculum guides often contain highlighted sections. The directive to the teacher regarding these is: "This publication is a service document. The advice and direction offered is suggestive except where it duplicates or paraphrases the contents of the Program of Studies. In these instances, the content is color coded in this same distinctive manner so that the reader may readily identify all prescriptive statements or segments of the document" (Alberta Gov't, 1982, p. 1).

In practice, what often happens is that if the prescription doesn't work (behavioral objectives are not met) the dosage is repeated or increased.)

> [I asked her if she could predict what she was going to do?] No, you could organize and say you wanted to teach something but I don't think anyone can say, its going to go this way and everyone's going to ... I think that kids have individual differences and I really believe in that. (86,11,19)
>
> I have always done my planning the best that I can, but I am going to brush up a few things in P.E. [for the upcoming school evaluation] I have so much experience in P.E. that I did my year planning and then did my day to day planning. I have to go back now and make unit plans. You have to cut corners somewhere.
> [R: Did you find some of that planning just busy work?]
> Half of it was busy work.
> [R: Just to please the school board regulations?]
> Yes, why do you think I am brushing up my plans in P.E.? I want them to look nice. I was really effective in P.E., but you see what they want to look at and you want it to look nice. (87,04,07)
>
> Before we do the stuff that is not required, I want them to master what they have to. (86,11,29)
> [One of the things they have to master, according to Shirley is their] basic facts. They are required to be able to do a hundred facts in four minutes at the end of Grade five.... That's standard for grade five. (86,10,15)
> [(Several students had worked through all of the times tables but a few were still back on the four or six times table.)
> [R: What would you think about perhaps putting the times tables up at the back of the room so if they are really stuck they could turn around and look at it?]
> That would be a really good idea. I like that idea. (86,11,29)
>
> [The following fall I asked Shirley: Remember last year we were talking about the multiplication

tables and you put them up, did you use them at all?]
Yes, and I use them when we have multiplication. (88,04,07)

I myself learn better if it is structured and I tend to teach fairly structured.
[R: Do you think you might possibly hamper some kids that could learn the other way?]
Well I think you have to teach from both ways. You can teach structured, but, and we talked about that last year; there is the teachable moment and so many wonderful things can happen. But for my organization, if you know the end result and you know where you are going, these other things can happen. (88,04,07)

[We were discussing teaching to specific objectives when Shirley said:] Yes, that's when I said these teachers who have taught for a long time have that whole thing and maybe sometimes my kids don't have that whole thing.
I will [in a few years] know what objective I am teaching to but I would have a broader more rounded [perspective].
[R: Could you talk about how you are going to become that kind of teacher?]
Well, I am going to add a bit on each year to what I have, just keep adding on.
[R: Are you going to just keep adding on or are you...]
Switching, and supplementing and adding. (87,05,21)

{Shirley's autonomy was limited by both the physical facility and the disruptions caused by the school social system.

Shirley did exercise her autonomy somewhat by "cutting corners" in her plans. It would be interesting to speculate on what kind of plans Shirley would have if she taught within a different system where written plans were not a major emphasis.

For Shirley, what was outlined in the curriculum guide, to a large extent, was what she saw she was supposed to expose her students to. There was evidence of Shirley beginning to see the need for a balance between mastering skills and putting the skills together in a meaningful, coherent unity. As Shirley sees her students meet with more success and less frustration, perhaps the times tables will be up all year (or students may have copies in their desks) to refer to at times other than just when multiplication is being taught.

As Shirley gains experience I can see her taking advantage of many teachable moments because she will realize that she will never "know the end result" until the "end" arrives but that learning will be achieved if the children have interesting experiences.

Some of the switching, supplementing, adding that Shirley does will be superficial things like changing the order of topics covered. Others will involve changes to her perspective system as evidenced by her saying: "I am more flexible now" (in her second year of teaching grade five) and her willingness to digress if "it's important for them." She will allow flexibility in her plans. Her interactions with the children, it seems, may be less lesson plan driven and more spontaneous in the future.}

Holistic Teaching.

The following discussion concerned holistic teaching and the meaning children get from school experiences.

> I think that children learn to read through the whole language process but you have to back up that knowledge with the phonics-based lesson. (86,08,26)
>
> [In educational gymnastics] the child goes through this sequence then the cartwheel would have more meaning to the child because its part of the whole sequence.
> [R: The same as the meaning in Language Arts?]
> Okay, I see what you mean; whole language would be kind of the same as Educational Gymnastics. They are bringing a lot of their background knowledge, it becomes more meaningful to them to do it. Yes, they're parallel [whole language and educational gymnastics] because they bring their own background; and they enjoy doing it because its their own. (86,11,12)

> [R: Do you think that Lorne paid more attention when you were telling him how to multiply because he had that problem to solve?]
> Ya, meaningful for him in other words, sure that's the same thing that you were saying, holistic [language] and educational [gymnastics] Yes it means something, so we've got to learn to multiply because we need it for this. (86,11,12)

{The previous few excerpts contain snapshots of the development of Shirley's perspective regarding holistic teaching/learning. These excerpts also show how conversations were often about previous conversations; that is, the conversational process was recursive. The arrays below represent the three conversations above, C[3] being the last one; S is Shirley and G is me.

$$\begin{bmatrix} G & G(G) & G(S) \\ S & S(S) & S(G) \end{bmatrix}_{[0]} \text{--->}C[1] \qquad \begin{bmatrix} G & G(G) & G(S) \\ S & S(S) & S(G) \end{bmatrix}_{[1]} \text{---->}C[2]$$

$$\begin{bmatrix} G & G(G) & G(S) \\ S & S(S) & S(G) \end{bmatrix}_{[2]} \text{--->}C[3]$$

The first conversation, C[1] which touched on the whole language aspect has both Gwen and Shirley at state 0 with respect to their shared views on holistic learning. Intermediate conversations touched on this topic again bringing us both to new understandings. The conversations shown above as C[2] and C[3] have Shirley and Gwen both at states 1 and 2 respectively. S(S)[1], which is the interaction of the elements of Shirley's perspective system interacting at state 1, exemplifies the importance of what Shirley has brought forth during the conversation. That is, Shirley started with definite understandings of how health and P.E. could be taught in a holistic manner; probably because she had much recreation and "people" experience.

Through our conversations (using the language of teaching and making analogies to her realm of expertise) links were made to other subject areas. The "okay, I see what you mean" seems to be an integration at a higher level by Shirley.

Shirley has seen the link between Educational Gymnastics and Whole Language and, later in C[3], when questioned about the math, sees the link there. It seems she is very close here to making a generalization although it is not verbalized. Over time, we both came to a better understanding of a holistic approach to all subject matter.

Often during the research, conversations were about past conversations. The reflections (integration at higher levels) were sometimes evidenced during a conversation and sometimes in a future conversation.}

Evaluation.

The following sections involve discussions directed to specific teaching and evaluation techniques that Shirley used.

> [R: You compare the kids to other kids when you evaluate. I have the feeling that maybe you don't like doing it that way.]
>
> It would be nice to only evaluate them on what they could do and how much they improve. But then of course you wouldn't have grades because you have to have a certain level to go to the next grade. I think there is enough difference as there is. So that isn't a choice but it is something you keep in your mind.
>
> [R: Does that bother you?]
>
> Yes it does. Because there are a few kids that try their darndest and they are just not grade five material. (87,01,07)

{As with many teachers, Shirley does not like the fact that she must use normative and criteria based evaluation. However, she says it would also be annoying to have students at many different levels. Perhaps with more experience, Shirley will realize the students will be at different levels regardless of the type of evaluation. She may also, as she gains experience, be more comfortable offering a different curriculum for each child. She does, on report cards, (as will be seen later in the section on positiveness) indicate how a child's understanding is improving.}

Professional Improvement.

The following are some comments made at different times which indicate Shirley's continued interest in improving herself professionally.

> I'm always learning; I'm still a learner. You want to keep improving. You learn everyday, you might try something with one child and it doesn't work so you try something else. You learn from experience. (86,11,19)
>
> Your first year is your inservice because you learn through experience. (86,11,29)
>
> I have a lot to learn just through experience. (86,12,10)
>
> As you experience things, you are learning, even when you don't know you are learning. I learn from the kids too. (87,01,27)

{Shirley indicates she will learn with and through her students and through experience as she interacts in the total school system environment.}

Sense of Community.

The above discussions dealt with Shirley's views on classroom practices and her professional development with respect to those practices. One of the other themes that emerged during our conversations was the idea of "community" within the classroom, school and larger community.

> ["We're a grape bunch" (and a purple balloon for each child with his name on it) and "Sign in for September" were two of the bulletin boards greeting the students the first day of school.] (Field Notes: 86,08,26)

> I set up rules with the class to build sort of a team spirit or classroom tone. I asked if they had suggestions for areas that we could work on. We went through the rules and I asked if there were any more rules. They came up with two: respect others and their property, and use classroom rules outside of the room.
> [R: What specifically prompted the two new rules?]
> Well there was poking and pulling hair and somebody scribbled in someone else's book and they said when I'm not around there is running in the halls and stuff. (87,05,21)

{There was an initial community feeling built at the beginning of the school year (Grape Bunch) and maintained during the year by the class members deciding what rules were to be followed and these rules were changed by the members as the year unfolded.}

Shirley found that the flow in the classroom community was interrupted by many other happenings, in and out of the school.

> There are so many breaks that it's hard to keep a continuous flow. For example, they seem a little bit more unsettled today [after a four day break] in that I have to review the rules. (86,11,19)

> I have to schedule around the interruptions, especially in December, so I don't plan as much. (86,12,10)

Shirley's sense of community extended beyond her classroom. She realized that the children belong to another significant social system, the family.

> I have a role or responsibility to the parents to be communicating with them. I think if you can work closely with the parents it benefits the child and it makes your job easier. Parent

> teacher interviews are not at all stressful for me. They have been good. (86,11,12)

{Shirley established a collaborative working relationship with the parents at the beginning of the year.}

> [Shirley's sense of community also included the school. Shirley actively pursued involvement with other staff members individually and on committees basing many decisions on "the needs of the school" (86,08,26).]
>
> I am on the Social Committee because when you work it is important to have good relations with the staff because if you are at a work place that is a happy place, it probably reflects in your attitude all around you. (86,11,05)

{There are some limiting aspects to the way Shirley saw her role in fulfilling committee responsibilities (the committees are set, and "everyone must pull their fair share of the load" (86,08,26)). However, she expressed her individuality by choosing the committees she did choose (intramurals, ski club, track and field and social committee). Because of her experience in the recreation area, the school received benefits.}

Shirley's sense of community is complemented by her showing respect for and treating each class member as an individual. I saw many examples of this aspect of her perspective system; a few are enclosed in the following section.

Respect for and Caring about Children.

One of the more noticeable aspects of Shirley's perspective system is evidenced by her respect for children. Shirley is aware of each student as a unique, worthwhile individual and encourages class members to follow suit.

> [R: What goal do you have for your students?] The attitude that they can achieve whatever they want. To build their self-worth. (86,12,10)
>
> [On one occasion during Health, Shirley discussed "put-ups" and "put-downs." They had discussed this before, during health, but she brought it up again because there had been some "put-downs" during the P. E. class. (Field Notes: 86,09,17)]
>
> [Shirley gave Peter (the boy with the alcoholic dad who makes and breaks promises) positive notes and attention.] He needs a lot of positive attention; he has the self-esteem of a rock. He just knows how to get negative attention and he won't get that from me. (86,11,29)

{Shirley feels a child's positive self-esteem is important. Certainly with positive self-esteem, one has the confidence to engage in activities which build positive self-esteem. A child who is successful at something will want to do more of that and thus will become more successful. Shirley encourages the students to use communication that will generate positive self-esteem in other class members (put-ups rather than put-downs).}

> [Cooperating teachers said about Shirley:] Empathetic and perceptive to her students' needs and interests, Shirley developed an excellent program. (Student Teaching Report: 82,4,27) The students responded very well to Shirley's teaching and her warm personality. (Student Teaching Report: 81,11,13)
>
> [The principal, during an inservice on behavior modification, said to Shirley, "You have several students that you could get into power struggles with and it has never happened."] But I thought about that after, and during the inservice she described situations and what we should say and I thought, "Well that is kind of common sense to me." (88,04,07)

{Because this component of her perspective system was evident several years ago, in her student teaching, it could be said to be an invariant. Shirley's avoidance of power struggles with students is evidence of her respect for their autonomy. Because that attitude is "common sense" to her, it indicates it is a fairly stable aspect of her perspective system.}

> I don't think that another teacher's perception really affects my perception because some kids ... could have been labelled wrong or they could change. (86,08,26)

> Basically I tell them, "This is a new year and you can make it the best that you want. What happened last year doesn't matter." (86/09/17)

{Shirley lets only her own perceptions and not others' opinions or labels influence her. Her thoughts that "they could change" and "this is a new year" influence the interactions Shirley has with the children.}

Following are a few incidents with individuals which exemplify Shirley's respect for individuals and her awareness that each child has unique qualities.

> I gave Laura extra time to answer a question because she was probably thinking of the best and most creative ... she probably just didn't have something up to her standards. I also have her helping others, doing research and writing book reports, but she can't write book reports all year. I'll have to find some other things to keep her interested. (86,10,01)

> [This is how Shirley dealt with a note passing incident by Brian] Brian is very quiet and works quite well and I was just walking by and I noticed he had a note in his hand. I walked by his desk and just opened up my hand and he put it in mine. His face was red; he was totally embarrassed. I never said anything and no one noticed. I put it in the garbage and that was the end of it. I think that is enough for him. I didn't draw any attention to it because it was not important. (86,10,01)

> [She had Dennis (the overweight boy) demonstrate a unique way of getting over the horse in gymnastics.] Well, he really got onto the box-horse differently, sort of sliding up it and down it. He is a little overweight and not that athletic, so I built it up a bit, saying it was

> neat, so he would volunteer again because he hardly ever volunteers. (86,11,19)

{Shirley realized there was conversation going on within Laura. She realized that the girl would not share something with others that wasn't up to her standards.

Students like Laura have to be exposed to new content or the old content in such a different way that they will notice the change and accept it as a challenge. Each student will find different topics and experiences interesting. Educated guesses can be made after chatting with students, but some experimentation will still be necessary.

The maintenance of Brian's positive self-esteem was far more important than the fact that he had broken the rules.

Shirley appreciated the spontaneous, creative solution Dennis discovered for getting over the horse and showed her acceptance by building it up. Encouragement like that offered to Dennis enhances students' positive self-esteem.}

> [During Health class, kids referred to last year when Jennifer was a pain and told teachers off. Jennifer got restless during this discussion and started to act out. After getting the class working Shirley asked Jennifer to step outside the room. (Field Notes: 86,10,15) I asked her what she talked to Jennifer about.]
> I could see she was getting upset so I said, "Isn't it interesting we were talking about actions and consequences this year. If you do good things, positive things, it produces positive and you do negative things it gives negative and last year you did some things that weren't so good, didn't you, and how did you feel?"
> She said, "Bad"
> So I said, "Don't let little comments like that bother you because it's going to happen because that's all happened and people remember those things, but soon they will forget because all the positive things are going to outweigh all the negative. We're not worried about what happened last year are we?" And right away she smiled. (86,10,15)

{The incident with Jennifer shows a consistency in Shirley's perspective system (what she says and what she does.) She does believe that "this is a new year" and things can be different. As time passed, I noticed a change in Jennifer, toward the positive.}

Although there have already been shown many instances of the positive aspect of Shirley's perspective system, the section following contains specific examples.

Positive Attitude.

Shirley's whole being seems to be organized by her positive outlook and actions, it is the one aspect of her perspective system that is definitely invariant.

> Due to her excellent rapport with the students, Shirley maintained exceptional discipline and classroom management. Shirley's enthusiastic nature and positive outlook provide for a most desirable classroom environment. (Student Teaching Report: 82/04/27)

> [In an interview with another teacher, Barbara, she commented:] Shirley is always positive and fun to be around. (86,12,08)

{Shirley's positive attitude was noticed several years ago; therefore, there has been some invariance to that aspect of her perspective system. Barbara's comment was made with respect to Shirley's attitude, not only in school but also in out of school interaction, indicating a coherence between the personal and professional realms of her perspective system}.

> [As Shirley walks around the class she is giving positive feedback to the students. She writes comments like "Good work!" "Neat work!" in several scribblers. (Field notes: 86/09/03)]

> [Shirley tells the class,] Thanks for being in the centre of the gym, changed and ready, that's great." (Field Notes: 86/10/01)
>
> [Shirley thanks Lorne for coming in from P.E. and getting out his books. (Field notes: 86/09/03)]
>
> [Shirley said she uses positive reinforcement because] I like to do it. It makes me feel good. (86/08/26)

{These are just a few examples of behaviors that exemplify the positive component of her perspective system. She goes out of her way and takes time to do things in a positive way because "it makes [her] feel good". The self-generating aspect of her "positive attitude" is clearly evident here.}

> [Shirley planned to use a discussion from Health class (about "put-ups" and "put-downs") to carry a discussion about sportsmanship during Phys. Ed.] (86/09/24)
>
> [Commenting more about the discussion she had with Jennifer regarding positive behaviors:] I said, "Everyone notices the change this year because you have been doing all positive, doing great things and what's the result, what's the consequences?" [this had been a concept discussed during Health] She said, "Positive, and everybody likes me." We had a talk about three weeks ago about "Thinking before doing" and that is what she is doing. (86/10/01)

{Shirley encourages class members to be positive rather than negative in their recurrent interactions.

She also realizes that change takes time and that Jennifer is going to have to be continually encouraged to show positive behaviors in order that her interactions with peers will become reciprocally positive. Shirley's discussion with the children (in Health class) regarding thinking before doing and realizing the consequences is a good example of how humans are able to anticipate consequence through their languaging capabilities.

Both of these discussions are evidence of the relevance Shirley sees Health/P.E. has to social interaction.}

> [Regarding parent teacher interviews:] Well first of all, I like to tell the parents something good for sure, something positive, and well, for all the kids I know of something good to say about all of them, that's the first important thing. (86/11/05/13)

> [Remarks on the students' report cards are either positive or suggest ways the student can improve:]
> Jennifer is working hard at being a good citizen, keep up the good work.
> JoAnne makes a conscientious effort to complete all math assignments. She is progressing nicely. She has some difficulty with problem solving. (Taken from report cards; 86,11)

{In her interactions (oral and written) with parents, Shirley emphasized the positive.}

> [Shirley talked about the ATA Convention by saying she purposely chose things to] get some energy. One was The Psychology of Winning, and another was What is an Effective Teacher? All of the things that I went to were kind of the same. (87/04/07)

> [Shirley indicated in an informal discussion that she gets energized by other staff members who have positive outlooks. (88,04,07)]

{Shirley, perhaps subconsciously enters interactions which will assist in the maintenance of the positive aspect of her perspective system.}

> [I asked Shirley if she saw some things happening and was required to do some things that she did not agree with.] Yes but, I want my permanent contract so you just do those things. I've never been one to rock the boat. (87/01/27)

> [Shirley talked about a period of time when there was much negativeness in the staff room; the teachers were under a lot of stress because of the upcoming school evaluation.] There was a lot of complaining while I was around, and I started to think well maybe teaching wasn't all that I thought it was going to be. There is a lot of negativeness out there but you can separate yourself from it.... So I didn't go to the staff room for a couple of days. I just felt really down and I shut myself off, but that was worse. I need to be around people and I like to be around

> people. I just decided, I slapped myself across the head, I just thought enough of this, this is stupid; you are just feeling sorry for yourself. I sort of did a comparison with marriage; it has its ups and downs.... I don't feel good when I'm like that so I either have to snap out of it or sink completely.
>
> [R: So one way you cope with other people's negativeness is just walking away?]
>
> Don't be involved. Because if you get involved in it, you just get yourself upset, so I find it easy to just ignore it.
>
> [R: Is there a possibility that you could have some influence on the others?]
>
> Oh yeah, I think that it is already working a little bit. I think too that when you don't complain people realize that you are not going to add fuel to the fire so what's the use of complaining to you because you're a real drag. (87/04/07)

{It is interesting that the last few conversations occurred late in my interactions with Shirley. Perhaps it takes that long to build a trusting relationship in which such subjects may be broached.

There were, I feel, two forces influencing Shirley's reluctance to be negative. One, as she said, was that she wanted her permanent contract. The other force, though, is more fundamental; Shirley is just not negative and has never been. The primary, invariant aspect of her perspective system is that she is positive. Even when she does feel she has the knowledge to criticize, she will not do it in a negative way.

Shirley did not allow negativeness to affect her. She shut herself off from it. In shutting herself off, she found that another aspect of her perspective system (that of wanting to be around other people) was affected. In order to sort out this conflict she thought about another situation, marriage, in which a comparison could be made. She came to the reflection (and "slapped myself across the head") that she could still be around the people but ignore the negativeness rather than shutting herself out completely. I have represented in the array below Shirley's interpretation of her interaction in subsequent conversations.

$$\begin{bmatrix} S & S(S) & 0 & 0 & S(A(S)) & S(B(S)) & \ldots \\ A & A(A) & A(S) & A(B) & A(S(B)) & A(B(S)) & \ldots \\ B & B(B) & B(S) & B(A) & B(S(A)) & B(A(S)) & \ldots \end{bmatrix}_{[0]} \dashrightarrow C[1]$$

Shirley did not let the negativeness expressed by A and B influence her, shown by the two zero elements in the first row. However, she did feel that her non-participation in the negativeness in conversations influenced others. That is, not saying anything did make a difference, therefore A(S) and B(S) are not zero. (Note that ellipses are included here to remind the reader that many components of this dynamic situation have not been included.) A and B at state 1, therefore would, from Shirley's perspective be different than they were at state 0; the worlds they would bring forth during successive conversations would be different.}

> I am working at being assertive because not speaking up against another's negativeness is not good in a way. I don't say things in an aggressive way because I am not aggressive and if I hurt someone's feelings I would feel guilty after. I am more assertive now than I have ever been, but I am not as assertive as I would like to be. I would choose not to say anything unless it is affecting my own kids. Like some of my kids from last year, [were getting in trouble with their new teachers] Then I did speak up and said, "Well they weren't like that last year."
>
> [R: So you were assertive.]
>
> Yes, I do speak up sometimes, but then I was involved with that, they were part of me.
>
> [R: So it affected you indirectly at least.]
>
> But if I heard a grade two or four teacher say something, I wouldn't say anything because it is just not worth the hassle, so I keep my mouth shut. (88,04,07)

{Shirley has always "accommodated" others because she has never been one to be rude, or rock the boat.

However, she felt a need for a change or she might be interpreted by others as condoning negativeness if she did not speak against it. This is shown in the array above by the S(S) not being zero; that is, there were self perturbations and her future actions will be more assertive, as indicated by her saying, "I am not as assertive as I would like to be.")

Shirley: Summary

In Shirley's beginning teaching she brought forth a world which was conducive to successful social interactions. Her early childhood and the relationship she has with her husband have enhanced this. Her development before becoming a teacher, included much experience with children, especially in recreational activities which would explain her perspective system appearing to be integrated at a highly coherent level with regard to the teaching of Health and Physical Education and in her interpersonal relations with her students.

There seemed to be less coherence in her perspective system with respect to her wanting to be told, versus taking initiative. On the one hand, Shirley, in university classes, wanted the professors to outline what was expected and in her teaching life, Shirley followed the rules of the system of which she was a member, being careful to cover the curriculum as mandated by the province, and to make teaching plans as expected by the school jurisdiction. On the other hand, she took a great deal of initiative in setting up a day care and in organizing extracurricular activities for students. Perhaps there was not a lack of coherence but a complementary balance between being told and taking initiative. One can not take initiative in all matters. Also, if one has had no experience in classroom teaching it is reasonable to expect that those who have had experience, professors and administrators, should have a better idea of what experiences might be valuable. Perhaps if Shirley were to go back to university now, she would want to take more initiative in what she should get out of courses. In addition, a strong aspect of Shirley's perspective system was that she likes things in order; therefore, it is reasonable to expect her to appreciate a planning system that efficiently allowed her to do this. Shirley, also, was "not one to rock the boat." One would expect her to follow the rules of an employer.

She managed to teach both Physical Education and Health in a coherent, holistic and meaningful way, incorporating skills into broader contexts and also enhancing the learning of the "whole" child by an incorporation of such things as sportsmanship and allowing children to demonstrate and to lead the class. There was a natural integration of P.E. and Health and

Shirley purposefully facilitated for this by time-tabling Health right after P.E.. As she gains more experience teaching and becomes more familiar with the mandated curriculum, I am sure Shirley's students will be exposed to a complementary balance of "nice to knows" and "must knows" and more integration of subjects ("I said these teachers who have taught a long time have that whole thing." (87,05,21)).

There was a complementarity to the way in which Shirley developed a sense of community and her appreciation of individuals. With her "We're a Grape Bunch" bulletin board Shirley created a sense of community at the beginning of the year and sustained it in her interactions with the children and the way she encouraged them to interact with each other. As she said, "We're in this together."

The one aspect of her perspective system that appeared to be invariant was the positive attitude with which she approached all activities.

Shirley expected more changes in her professional career: "Things are in order and I don't want to get into a rut, so I'll move to another school, or another grade or I might take some courses next year. I've been encouraged to go into administration." (88,06,09) Shirley recently enrolled in a master's program in administration at San Diego University. (89,04,27)

Ann

Ann's Biography

Ann Grimes is married and the mother of three children. Ann's father passed away when she was fifteen. Before he died, he asked Ann to look after her mother and younger brother and sister. A responsibility she took seriously, to the extent of holding jobs to supplement the family income. Her mother did remarry, but Ann still felt a responsibility for the emotional, if not the financial, well being of her mother.

Ann went through a three year teacher training program at a college in England before getting married and going to a small island in The Bahamas where she taught for three years.

In my interactions with Ann I found her to be expressive and articulate.

{Ann's sense of responsibility was a recurring theme in many of our talks.}

> [Ann remembered her college training as:] very much school based with few lectures. The lectures were always experience based. We would observe or teach then we would discuss what we saw or did. That grounding in the experience was very helpful.
>
> One teacher, I observed, I remember as being more concerned about kids' positive self concepts than she was about methodology.

> In my training in Language Arts there was an emphasis on developing the kids from where they were at and on purposeful reading and language. The thing they didn't do as well [as compared to her later University training in Alberta] was not make us articulate what we saw. What the courses in my B. Ed. program [University of Alberta] did for me was to provide me with a rationale. I don't think it is an either or.
>
> One time we got in a bus and drove off into the country to a school. The school was built in about 1600, it was an old school in an old village. We all sat along a big waist high stone wall around the playground. Out came the teacher and these five and six year olds onto the tarmac with their little mats and dressed in gym shorts and they had a gym lesson. We all thought it was cute and nice to get away from college, but we wondered why we had gone all that way to see it. But, I remember when I was in the Bahamas on that island and had no equipment. I thought, "I can't teach P. E.," but that little school yard came back and then I thought, "Oh, yes you can." So all of that experiential kind of learning was good. (87,02,24)

(In Ann's college training there was a consistency between what was said and what was done. College students were told to build on the experience of children and their training was school based so they could, themselves, build on their own experience.

The college students were encouraged to share the school experiences with other college students. Thus, there was mutual reciprocity in their interactions. Ann's whole college training was a recursive process. Conversations in college involved experiences from schools. During these conversations, reflections (integration at a higher level) were attained and subsequent observations were experienced with a new perspective. Through language, the instructor and class could reflect on the experience. One thing that Ann felt was lacking, though, was theory. This indicates the importance of a language through which analogies can be made in order that links may be made to other situations.

Even though these analogies were not made, Ann is the sort of person who was able to reflect on her experiences and use them, in her own teaching in other situations, ("that little school yard came back" and one teacher was "more concerned about kids' positive self-concepts than she was about methodology").}

> [At the age of twenty-one and newly married, Ann and her husband, also a teacher, went to the Bahamas to a small island where,] We were the only white people in a new culture. We were not welcome and often, at the beginning, told to go home. We had 120 kids ranging in age from five to 18. Some of the kids in the top class were designated as teachers. We ended up teaching the teachers on the weekend.
>
> The kids would sit on these long benches which might collapse and I'd have to fix them in the middle of the lesson. We were the caretakers, we were everything. We had no paper, books or materials. We had a blackboard and chalk. Since the only book they all had was the Bible, I used it as the reader. I went back to the basic principles that we experienced in college, what you experience you can talk about and what you can talk about you can write about and what you can write about you can read about.
>
> The math lessons were camouflaged as reading games. They thought this was great fun. I would write on the board, "Go to the beach and get three blue shells." So they would read the directions and do what the directions said.
>
> Later in the year, we were able to buy a reading series. We had a concert and charged, and I sold my wedding dress and bought the Lady Bird reading series which made a big difference.
>
> [At the end of three years, Ann and her husband left the island where it had been] kind of nice to do work on the beach and have the waves wash it away. [Several things contributed to their decision to leave.] We had a small child and my husband had been sick and there was no medical facility on the island. We also felt we couldn't expand because we didn't have the resources. (87,02,24)

{Only persistence, sacrifice and hard work eroded prejudices as the island inhabitants slowly grew to accept and respect Ann and her husband.

> The doing, writing and reading were mutually influential during the learning process. Ann's using of the environment (the beach, shells etc.) with which the children had already interacted many times probably enhanced the chance of their learning how to read and do arithmetic.
>
> Their decision to leave was triggered by ill health and lack of opportunity to grow intellectually.)

Ann came to Alberta where her husband enrolled in university and she became a grade three teacher in an inner city school. The principal had told her the children were culturally deprived.

> When I saw these "culturally deprived" children with shoes on and not having to walk seven miles to look after goats, and I had film strips and films and books and I didn't have to clean the toilets. It was heaven. (87,02,24)

It was at this time that I met Ann. No wonder she so willingly washed the dishes after the school pancake supper and sorted donated prizes for our penny carnival. I remember being awed by what I considered her worldliness. I also remember the time she spent with grade one to six children to put on a very professional Scrooge play with the "bad" grade six boy playing a serious Scrooge.

I also recall being energized by her enthusiasm and impressed by her caring attitude toward children. She would often talk about the children in the Bahamas and relate experiences like the one in which some children came to school with rat bites on their feet.

Ann was not entirely enchanted with her first teaching experience in Alberta and was often frustrated by the "system".

> So when I came here and I was given these books to put kids through and some were ready for it but others couldn't even read and given the math series to go through and told what topics to teach, I found that incredible. Another thing that was hard for me was the workbook with all these rules about how to read that I had never heard of before. Here I was, 24, and I had taught 60 kids to read already and I hadn't heard of a diphthong and a long "a" and a long "e". It was like learning a foreign language, and I didn't see the point in teaching it. (87,02,24)

Although Ann did make some use of the workbooks, they did not become the curriculum. I can remember the reading consultant chatting with Ann in the staff room and her being astounded that Ann's students had done so well on the standardized reading tests. Ann referred to this period as one of frustration during which she had to defend her actions but did not have the theory to back her up.

Ann's husband taught the following year while Ann completed her B.Ed. degree taking senior curriculum instruction, philosophy of education and general arts and science courses. She felt that these courses provided links between the practice she had experienced and the theory she felt she lacked.

{Ann found the school system in which she worked somewhat constraining; therefore, she did not follow all of the rules.

The teaching experience in the city did awaken a desire in her to further her education. She felt she needed theory to back up her actions. Her university experience was quite rich because she had an experiential context in which to put professors' lectures.}

Ann subsequently taught another two years then completed an Elementary Language Arts M.Ed. program and taught for ten years at the university level. She was near the completion of a Ph.D. program when job stress and family and personal illness compounded, forcing her to quit. During her tenure at the university, Ann was responsible for supervising student teachers, teaching general and Language Arts curriculum instruction courses, committee work and doing research but would have preferred to concentrate on the former two rather than the latter two. She remarked, "I would like to read research done by others and relate that to practice for my students, but I'm not much interested in actually doing the research. However, to keep your job at the university you have to do the research." (informal conversation, 86,02,18)

During this time, an integrated program (The Alternate Program) was introduced in which a team of staff members from all departments of the faculty dealt with small groups of fourth year students. This program operated for a few years; but, because of increasing enrollment and decreasing funding, the program was phased out.

> [R: Ann, you said during one interview that before you were involved in the Alternate Program that you viewed your role as an imparter of knowledge. You said further that the social interaction between yourself, your colleagues and students during interactions in the Alternate Program modified that role toward more of a process facilitator.]
>
> The students saw themselves as in control of their own destiny.
>
> You could look at the new program as being a perturbation as I reflected on the experience. The new program was so good that I felt a responsibility to make the other classes better; but I couldn't because of the context.
>
> As the program was winding down I couldn't do what I wanted to do, especially in the other classes, because I was so busy personally and professionally and I felt guilty. (88,04,26) [It was shortly after this that Ann left the university.]

Much of the interview data I have for Ann are her reflections on experiences she had while teaching at the university and doing inservice work which she did after leaving the university.

Ann has recently completed her training for and accepted a job in a field other than education.

{Because Ann felt she could not fulfill the personal responsibilities and those required in her profession she quit teaching at the university.}

The Inservice

Observations.

The inservice sessions I observed involved eight demonstration sessions with classes, four consultation sessions with individual teachers, five workshops after school, and a talk at a conference.

Before doing a demonstration lesson, Ann chatted with the teacher regarding the nature of what she was going to do. She usually, while the children were involved in an activity during her demonstration lesson, would point out things to the teacher to explain what she had just done, what was coming up, or how to "evaluate" what the children were doing (Field Notes: 86,01,29; 86,02,27).

The topics of after school workshops varied, depending on how much work Ann had already done with the teachers and what agenda the teachers brought to the workshop. The first workshop with a group of teachers involved the role of drama in the Language Arts program during which Ann used the Language Arts curriculum guide and Drama resource books. The former to show the link between what she was doing and the curriculum and the latter as an extra source of activities. She also gave a handout to teachers which summarized sample drama lessons and activities. The purpose of subsequent sessions was to facilitate sharing of children's work and experiences among the teachers and to deal with any problems the teachers might have had with implementation.

Teachers were encouraged to bring children's work to the after school workshops to share and to work together with other teachers to collect materials. Ann encouraged the use of the child as expert whenever possible and emphasized the importance of a sense of audience toward which the students could direct their activities. All teachers did not attend the after school workshops and both Ann and the teachers often appeared very tired at the workshops. (Field Notes: 87,03,10; 86,02,18)

The conference session I observed involved a discussion of different types of drama (drama as exercise, drama as interpretation, drama as a context for understanding) and the purpose of drama in the Language Arts program. Ann distributed materials on sample drama lessons and activities and the teachers participated in some of the activities. The session was culminated in a question and answer period. (Field Notes: 86,10,07)

(Through ongoing, school based inservice the consultant can come to understand the constraints under which the teachers must work and provide resources with which the creativity of the teachers can be enhanced. Written theoretical materials and children's work can complement the interactions that take place between teachers and consultant.

Using children's work during workshops is an example of how Ann anticipated the later use of children's work. The arrays below represent the process that took place.

$$\begin{bmatrix} C & C(C) & C(E) \\ E & E(E) & E(C) \end{bmatrix}_{[0]} \dashrightarrow L[1]$$

$$\begin{bmatrix} T & T(T) & T(A) & T(E(C)) & T(A(E(C))) \\ A & A(A) & A(T) & A(E(C)) & A(T(E(C))) \end{bmatrix}_{[1]} \dashrightarrow L[2]$$

Ann, A, anticipated that there would be some useful byproduct, E(C), during L[1], learning on the part of the child. The discussion during the subsequent session revolved around this product. This session triggered changes in the teachers' perspective regarding teaching of language arts. This is shown by T(E(C)), without Ann's interpretation and T(A(E(C))), with Ann's interpretation. Sharing of examples of students' work was conducive to change because the teachers could see what their students *could* do.

The whole inservice experience was connected, with products of one session (class demonstrations) becoming part of the process by being the subject of a workshop discussion. During and after these discussions, reflections were formed. The teacher would then either try some of the activities or at least be able to watch future demonstrations in a more enlightened way. There was a complementary balance between theory and practice during the entire process.)

Researcher participation.

At one point in my data collection with Ann, I was very much the *participant* observer. Up to that point, although I was impressed with Ann's talents and the way in which she related to the children and the teachers, I hadn't realized just how much energy it took to do all that she did. She wanted some extra time to consult with one teacher and asked me if I would be Marty Monster. I said, "Sure," thinking all I would have to do was put on a costume and act like a monster. Little did I know what I was getting myself into.

The following is an excerpt from my Journal after being Marty Monster. "I dressed up as Marty Monster with a box over my head and tried to encourage the children to respond verbally to my questions about their day-to-day life. Ann was not in the room and the teacher was hiding because Marty was afraid of adults. [Ann did a follow up writing lesson with the children.] I can really empathize with Ann now. This is exhausting. Especially when trying to worry about what you are doing on two levels, one for the students and one for the teacher. [Ann had coached me to pay particular attention to encourage any oral language to expand the children's level of expression.] It is very risky for the consultant because she doesn't know the kids and, if the activity is open ended, doesn't know what might happen. It went quite well but I was really exhausted after the 20 minutes. (Journal: 86,02,18) [After this experience, my interactions with Ann took on new meaning. I think that because I was willing to take this risk, Ann was more willing to share because she realized I really understood what she was saying.}

Interviews.

Interviews with Ann did not follow a particular agenda but rather were open discussions in which Ann enlightened me with her thoughts and feelings on inservice in general and the language-drama she was involved in at that time. Her reflective attitude allowed her to articulate rich insights which I share with you below. Following is a general discussion about how teachers must change in order to incorporate drama into their program.

> In one classroom, I could see that the teacher was focussing on behaviors and didn't realize that the curriculum was also the problem, he was trying to teach phonics with a reading series. He didn't realize that these kids should still have been playing. They didn't know what a book was, they didn't have a global context in which to put the skills the teacher was trying to teach.
>
> With drama and writing, you can do only so much and then it demands an incredible role change and an incredible structure change in the classroom. By structure I mean the relationships between teachers, students, materials and time. It is the difference between modifying a house or deciding to go to a solar house and therefore needing to build a new house.
>
> This structure is an embodiment of what the teacher believes about language and learning. If the kids are involved in writing and they want to keep writing, then time structure comes up if the teacher has other activities scheduled for that time. Then the teacher has a problem. This is

when I start seeing a change and teachers saying, "Well how can I..."

The shift is enormous, and this is difficult if there isn't a school policy such that the principal and other teachers understand what the teacher is trying to do.

Another problem is the way children are evaluated and grouped. If a teacher is doing a lot of reading then the writing would be evaluated using a story. If another teacher is using worksheets for reading then the writing would be evaluated using the results of CTBS (Canadian Test for Basic Skills). If the classes are organized according to reading level on a particular reading series, then the reading text becomes the curriculum. (86,01,26)

[R: You said that you try to work within the structure that is in the school, and tend to go slowly because change is anxiety provoking, and that teachers can't contend with all the change and you don't want to make teachers more anxious.

I try to anticipate problems and then act as a broker to change the school structure.

[R: Is that why you work with one or two teachers and use the work of the children to bring it to the other teachers?]

Yes, I suppose you could say that I use one or two teachers and their classes to influence the other teachers and the administration. Once that has taken place I build a support system; it is peer support and the teachers feel it is practical. I encourage sharing so energy is not wasted.

[R: You said it is important for the teacher to see the children's progress.]

Yes, I think you could say it's a confirmation. It is looking at children's writing development in depth. Using my expertise I help the teacher articulate the improvement. When I am working with a teacher, I use a lot of enthusiasm. For example, if the child has gone from making squiggles to making words, the teacher might zero in on how poorly the letters are formed or how

> wrong the spelling is; whereas I will say, "Oh, look it is the beginning of a story!"
>
> I read how open the teachers are by their body language and voice tone. For example, the teacher whose grade two class you observed was really closed at first so I did quite a dramatic exercise with her class because she needed to see a dramatic change in the kids to be convinced. I felt she had to be sort of shocked. Her verbal language was, "Would you come to my classroom?" But her body language (she had her arms folded across her chest) and voice tone said she really didn't think it was worth her time. (88,04,26)

{In order for a child to be a successful reader, the child must bring forth an enriched world. Drama can enrich this world. Ann's saying, "Structure is the embodiment of what the teacher believes about language and learning," is very similar to Maturana and Varela saying that structure denotes the components and relations that constitute a particular unity and make it real.

Ann realized when the teacher had been influenced and was restructuring ("I start seeing a change and teachers saying, 'Well, how can I....'") Ann realized that integration at this new level usually requires enormous changes and that the total system in which the teacher works must be supportive of these changes ("there has to be a policy for accommodating this.") There is a need for coherence in method within the school. If one teacher, uses one method and evaluates and advances students based on that method, the resulting grouping of students will not have much meaning for a teacher who gets them the following year but uses a different method. This says nothing of the confusion which may result on the part of the students and of parents of the students.

Perhaps Ann's background in drama enhanced her awareness that body language is an important part of language.}

In the following paragraphs Ann discusses the differences, to her, between "one shot" conference type inservice sessions and school-based inservice.

School based inservice is most meaningful for me because I can experience talk transformed into action and action generate new thoughts. I find this work meaningful because I am working with the concerns of the teachers rather than telling them what to do. My planning began to consist of preparing several possibilities for action from which the teachers could select. We make decisions using me as the expert in drama and the teachers as experts of what their children might need. The discussions are more incidental than logical. My speech is quite natural.

This process is stressful for me because I feel a tension of not covering enough; this is similar to the teacher feeling that she has to get through the curriculum. I felt that I was shirking my responsibility until a teacher said that it was this open format that made her feel comfortable and got her going. (86,02,24)

[R: You compared the teachers' needing to get through the curriculum with your feeling of getting through the curriculum when you use an open ended inservice approach where the agenda is decided by the teachers as you go along. Do you think you can relate to the teachers' feelings better because you could see this link?]

It bothered me; not being able to give the teachers all the knowledge I wanted them to have. I still have that tension of wanting them to learn all I know and yet I know it takes time. During one workshop series I kept a diary of my own feelings regarding this and shared it with the teachers. I think this helped the teachers open up to my ideas. For example, during one of the workshops a teacher had written, "Ann forces you to do things." I wrote in my diary that this idea of forcing them bothered me and I told them, "I am really trying to get away from control and force." The teacher said, "Oh, no! I meant force as in energy." So I guess I was such a perturbation that they had to it. A perturbation can be an inspiration. (88,04,26)

Through the school based inservices I have come to a richer understanding of curriculum development. Curriculum change relates to a change in consciousness in unique individuals which changes their action in the classroom thus changing the

> curriculum experiences for the children. I have witnessed this many times through the shared thoughts of the teachers and observation of their classroom activities. The notion of "Force" or the "Let's go" attitude which is the beginning of a change cannot be legislated. It must be felt and lived through. It seems to me that most curriculum developers ignore this fact. (86,02,24)

{The mutually generating aspect of thought and action were apparent to Ann. Ann's interactions with teachers resulted in the teachers' agendas being met rather than Ann deciding on the parameters for the interactions. Ann anticipated what could potentially be helpful and prepared several possibilities from which the teachers could choose. In the inservice sessions both Ann's and the teachers' expertise was used, and the creativity of the system was thus enhanced.

Ann found the school based process "stressful" because she felt responsible to "cover more". She equated this stress to that which the teachers feel about getting through the curriculum and was, thus, able to empathize more with them. Her perspective regarding curriculum development has integrated at a higher level ("I have come to a richer understanding.") Ann realized that curriculum developers (or system authorities) can not instruct teachers ("a change cannot be legislated"). There has to be recurrent interactions of the teacher and curriculum ("it must be felt and lived through"). The interactions in school based inservice take on a spontaneity because they are incidental and the language is natural and the situation is flexible.}

> [For conference type inservices] I prepare outline notes and transparencies so that I can "talk" rather than "read" my lecture. The "talk" still isn't natural though. When I have ventured into group work, I have not found that very successful either because often the task can't be immediately applied so there is a lack of interest. I find, too, at conferences that teachers have not seen each other for awhile and they often want to chat.
>
> Another difficulty with conferences is to judge the level the teachers are at; I never please very many. I sometimes feel like more of an entertainer than an educator.

> Often in a *conference* type of situation a teacher will ask me a question or voice a concern and my response will be answered with, "Yes, but..." But in the classroom situation [*school based*] they will say, "I wonder if..." or "Do you think...", or "I feel..." but never, "Yes, but..." (86,02,24)
>
> That shift in language indicates a big shift in their outlook in that *we* are in this together trying to help these children. This varies, some teachers never get there, others are there within a week. I know that until that point is reached, I am not into the relationship proper. (86,01,26)
>
> [R: You said the difficulty with "one shot" workshops as opposed to school based in-service is judging the level and that you end up pleasing only a few.]
>
> Yes, that and the fact that I am in the role of expert so there is a sort of input output model where the teachers are there just to pick up what they can. Conference workshops can, though, be a perturbation that triggers some action on the part of teachers. After one workshop I did using elementary kids (using kids gives it more meaning), a junior high teacher who saw it arranged for me to come to his school for some school based workshops. We had good results at his school. (88,04,26)

{It seems the difference between conference and school based inservice is in the recurrence of interactions. Ann did not "know" the teachers at a conference because she had not interacted with them often enough. The interaction is represented below.

$$\left[\begin{matrix} A & A(A) & 0 \\ T & T(T) & 0 \end{matrix}\right) \dashrightarrow C$$

The zero elements indicate that neither Ann nor the teacher are particularly changed with respect to language-drama through the interaction.

At best one could expect the array below to represent the situation.

$$\begin{bmatrix} A & A(A) & 0 \\ T & T(T) & t(a) \end{bmatrix} \quad \text{----->}C$$

Where Ann is not at all influenced by the teacher(s) because the interaction is one-way, like a lecture; and the element t(a) would be fairly weak. "Yes, but" indicates that not much change was triggered in the teacher by Ann's presentation. Answers like, "I wonder if," indicate a change may have been triggered.}

Demonstration Lessons.

A major part of the school based inservice that Ann conducted, centered around working with individual teachers after doing demonstration lessons.

> The teacher usually asks for a demonstration lesson. I value the experience of doing this because it allows me to take the attention off the teacher. I talk about the program and their children by saying I did this for this reason. What this does is help the teacher reflect on what she has been doing by my reflecting in dialogue with the teacher on what I have been doing. In this way I can indirectly critique what the teacher doesn't do. It sets up a chance for the teacher to talk about the kids and start making connections and she might say, "Oh, that is why that didn't work the other day." It is a mode of reflection. (86,01,26)

{Activities the teacher observed Ann doing or which the teacher herself had done became part of the process of learning how to incorporate drama into the curriculum. This was facilitated by Ann conversing with the teacher using the language of teaching and drama. This could result in an integration of the teacher's perspective system at a higher level as "she starts making connections."}

> I have to push the teachers to realize that what I am doing will work. I have to be somewhat successful so the teachers see the possibilities or they will think, why bother changing. I have to keep the kids on task, focussed, using all their oral language and maybe writing. The teacher has to realize, "Oh yeah, my kids can do that." They sometimes say, "I never thought they were capable of that behavior." Once they see it they cannot negate it. You have to stay at this awareness level for awhile until the teacher can absorb and change. (86,01,26)
>
> I want to help teachers, not put a guilt trip on them.... I have that tension between what should be and what is. (86,02,18)
>
> I try to use all my knowledge but try to keep it as simple as possible so the teacher can look and say, "Oh, I could do that." It has to be something they can use. (86,01,29)
>
> I try to work within the structure that is there. I tend to go slowly so the teacher can contend with the change because change is anxiety provoking and I don't want to make teachers more anxious. I try to do something fairly small and work with one or two teachers. The dialogue I have with teachers is important so they can see the students' progress. I help the teachers see the students' strengths and build on them. (86,01,26)

{Unless Ann was successful, what she did would not have influenced the teachers. Ann's realization that she had to stay at that level for some time indicates her awareness that change takes some time. The teacher had to have time to integrate this new knowledge at a higher level.
Going slowly. doing something small, encouraging sharing and providing support all increased the chance for change to happen rather than the teachers' being overwhelmed. Building on children's strengths (rather than pointing out weaknesses) probably increased the speed with which the children's work improved.}

Teachers' Comments

The following comments were made by teachers regarding the project in general, the demonstration lessons or the consultation sessions which followed demonstration lessons.

> Susan (a first year teacher): The inservice helped me develop a relationship with the other teachers and that opened the road for sharing.
>
> Gloria (an experienced teacher): Ann is supportive of the teacher and what she is doing. she helps me evaluate each child by seeing the development and how to further develop the child's writing. Ann emphasizes what the child can do rather than what the child can't do. When looking at the work with Ann, I can see the progress more so than by myself. I realize that I have accomplished more than just wiping noses. She can make you believe it will work. One demonstration lesson is enough because I have to learn to make it work in my own classroom. I have to put it in context and adjust it to my own personality.

{The inservice provided a context in which the first year teacher could develop a sharing relationship with the other teachers. I observed Ann's consultation session with Gloria and they seemed to "click" personally and professionally (Field Notes: 86,02,18). Ann's continued support was important to this teacher and the consultation session I observed seemed to be a rich example of teacher and consultant offering reciprocal support to the other. This teacher, as did others, realized that she had to adjust the method to fit the context and her personality.}

> John (an experienced teacher): My beliefs about what is important in teaching Language Arts have not changed. However, I now have several new techniques which will enhance the program. The techniques are "practical devices" which fully support my philosophy. Too often it is difficult to put theory into practice. Ann did that for me.

> Mike (a second year teacher): Ann understands the unique nature of the school and of each class and, thus, could gear her lessons toward the levels and temperaments of each class.... My class would not even attempt to write to begin with. A number would throw their paper and pencils on the floor and put their heads down. Now, with the exception of two students, they will all write at least one or two sentences with most writing activities. Their vocabulary has improved and many of the class search for words to use and are making better use of phonic skills.... I have changed my approach to Language Arts by placing far more emphasis on writing in my classroom.

Ann: Summary

In Ann's beginning teaching she brought forth a world rich in experience. Her experiential based preservice training not only influenced the way she taught children but also the way she later conducted inservice sessions.

Ann emphasized that children need a sense of audience when writing and that writing must be purposeful (she was made to realize this during her early preservice training). The positive self-esteem that she was encouraged to foster in children became an important aspect for her to foster in teachers. She was very careful to not put a "guilt-trip" on teachers. Ann facilitated growth in students and teachers, in her teaching and inservice respectively, by emphasizing strengths and encouraging learning to start from where the learner was. Using teachers' experiences and letting teachers' agendas drive the in-service sessions facilitated development of the teachers' perspective systems. Conversations with children and teachers during demonstration lessons became the topic of conversations at workshop sessions. All of these examples could be incorporated under Ann's perspective that persons must go forward from the experiential world which they bring forth.

Throughout Ann's development as a preservice teacher, teacher, university student, university professor, consultant and present career; the invariant, sense of responsibility feature of her perspective system was evident. As a teenager, she held jobs to help with the family expenses; she sold her wedding dress to pay for children's books; she returned to university to back up her practical knowledge with theory; she supported her family while her husband continued university; she took an active role in the Alternate Program and on committees while working at the university and she did some educational consulting work while completing her training in her new field in order to help pay for a family vacation. If a position, as she saw it, had responsibilities she felt she was not adequately fulfilling, Ann left that position and entered another position until the responsibilities there, too, became overwhelming. Did she shirk responsibility? No, colleagues in the various positions she has held, have often said that she just tried to do too much. From an observer's point of view, it could be said that Ann has, with each job change, become an unity of a different kind. However, from Ann's point of view, she has always been the same. She has maintained adaptation in order to fulfill that sense of responsibility.

Cathy

Cathy's Biography

Cathy Clarke grew up in Edmonton and is married and the mother of a teen aged boy and an adolescent girl. Although she had virtually no experience with younger children, being an only child and not having babysat, she became a teacher because:

> In my day, girls either became teachers or nurses and I got sick if I went to a hospital. There was really a push in my family to go beyond high school since neither of my parents had. When it came down to it, I didn't think there were many choices.
>
> I went to university for two years. I can remember my mom and I having discussions about things I was learning. Mom would often play the devil's advocate. So I would have to reflect on what I had learned and come up with good arguments. That sort of thing taught me not to just swallow everything I was told but to think about it and look for other explanations.
>
> [After the two years of teacher education at university, Cathy married and taught a grade two class. As she looked back on that year she said:] It was quite disastrous. I had it in my head that these thirty little grade twos were robots. I tried to control them and it didn't work. At the end of the first year, my husband and I discussed my going back to university and decided we couldn't afford it. I went back [teaching] and things worked a lot better. (87,03,29)

(Had Cathy been born at a different time, perhaps she would not have become a teacher. Perhaps, also, she would have become a different kind of beginning teacher, less controlling. As will be seen Cathy continues to question and look for explanations beyond the superficial.)

> After my third year of teaching, I went back to university and finished my degree.
>
> [It was at this time that I grew to know Cathy as we were in some courses together.]
>
> When I returned to teaching, a grade six class, I started to change my teaching. Why, I don't know.

{Although Cathy could have continued teaching and was feeling comfortable, she went back to university to finish her degree. This is an indication of her willingness to continue to grow professionally. This is an important aspect of her perspective system.}

> When I first started teaching, I saw the children as a whole mess of little faces; and my job was to teach them. Whereas, after a couple of years you start to notice this kid and his strengths and wasn't that a neat thing that he did. That took some time. (87,03,29)

{Perhaps in her first years of teaching Cathy was "just surviving" (as many beginning teachers do). Once she was accustomed to all the routine duties of teaching, she was able to distinguish individuals as separate from the whole class.}

> When I started developing relationships with some of the teachers, after about a year and a half, I got more confidence in what I was doing. I really think you need other people to bounce ideas off to see if they make sense, to develop your confidence. (87,03,29)

Cathy has continued to teach for a total of twenty years with interruptions when her children were small and to do the course work for a Master's degree in Education. She became involved with computers in about 1979 and that involvement changed her outlook on teaching in general and is one of the things that influenced her pursuit of her Master's degree.

> Because there was not a computer for every child, I had to change my teaching style to accommodate.

> Originally I did not know a lot about computers and worked from the book; that was imposing the curriculum on the kids. Then I got intrigued by Papert; and the kids had a new freedom. It was such a positive experience for them that it fell through to other areas. I hope to always be open enough to not say, "Yes, this is the end and this is the way things are going to be and this is the way my classroom is going to be." (87,07,09)

Cathy has been actively involved in the ATA (Alberta Teachers' Association) Computer Council for several years and has also been involved in a Peer Tutor program in computers for two years. The goal of the program was to facilitate integration of the computer into the curriculum while meeting the needs of individual schools.

A new teacher was assigned to Glendale school for the fall of 1988. Cathy had known him in conjunction with the ATA computer council, and anticipated her continued growth while working with him because, she said, "He is the type of person who will question what I do" (88,06,03).

Cathy looked forward to her school's continued involvement in a collaborative project with the university in the fall of 1988. Several university students spent time at the school in conjunction with curriculum instruction classes. Cathy hoped it would be reciprocally beneficial to all involved (school students, university students, professors and teachers). She said that she was selfish in that she was hoping that there would be increased conversation between her and the university professors in order that she could continue to grow professionally. She was disappointed with this project because there was not as much communication as she had hoped for. (89,04,28)

Cathy has transferred to a new school for the fall of 1989 and is looking forward to having twelve computers in her classroom at all times and interacting with another teacher in the school who has been involved in research on a computer program with her class for the past year.

{Cathy actively pursued interactions which she expected to be mutually beneficial professionally to her and to the person with whom she interacted.}

School Setting

Glendale School is situated in an older residential community in which there is beginning to be an influx of young families, as original owners move. Although there are only 185 students, 45 are in four special education classes making for a large staff (38) of teachers and teacher assistants.

On several occasions, the principal, Sandra, has provided teachers with substitute time in order that they may engage in project or professional development. Staff meetings are often started off with teachers talking about activities in which they have been involved. This takes five to ten minutes and the sharing is often continued the next day by those interested in a particular activity.

While I was at Glendale school, I was made to feel very welcome, to the extent of being invited to after school get-togethers and helping on the discipline committee, of which Cathy was a member. During any given week, there were usually several visitors in the school: teachers from other schools, parents, and university staff and students. They were all given equal respect, and hospitality was extended to them.

{The school atmosphere, facilitated for by the principal, was one in which the creativity of all staff was encouraged to grow. Because support was provided, in the way of substitute teachers, the staff was not overwhelmed by the time commitments required for projects. Because visitors were made to feel welcome, they often returned.}

The Classroom

Cathy's classroom was a large, bright classroom with windows along one side, chalk boards and bulletin boards in front and on one side, and a coat area and sink and fountain in the back. The children sat at tables in groups of four or five. Across the hall from Cathy's room was a computer room which housed ten computers that were used often by individuals or whole classes. Cathy's class used this room often.

Cathy's Teaching

My data collection in Cathy's class started late in the year; therefore, her students were settled into their routines and relationships. The first observation in Cathy's class left me confused. I didn't understand how learning could take place in the midst of such apparent chaos. From 8:45 to 9:00 the children milled around, chatting, playing cards, coloring, drawing, reading comic or library books, trading stickers or chatting with Cathy. This, I found out later was "Free Time" and it happened every morning.

From 9:00 to 9:15 Cathy read a story to them while they practiced cursive writing. I wondered how they could concentrate on both at the same time.

At 9:15 Cathy said to her students, "You are going to have to clue me in, you have been working on a story." (She had been absent for two days.) The students explained that they were to write an ending to a story. She asked them to share the story at their table and went to some of the tables to read stories while the children shared their stories at the other tables. She then got one story from each group and read it to the class and discussed the story line with the class, while class members made suggestions for improvements. Later, nine of the class went across to the computer room to finish entering or editing their stories while the others finished writing or drew a picture for their story.

I noticed one little grade four boy, Stephen, who wore rubber boots and a leather jacket. The following day he wore a kangaroo jacket under the coat and pulled the hood of it down over his head peering out occasionally like a gopher out of a hole while perching in a squat position on his chair. Other days, the front or sleeves of his shirt were wet from his chewing on them. I was impressed with the caring attitude I observed Cathy showing toward Stephen and other students in the months that followed.

A slim, grade four girl, Linda, rarely sat in the traditional position on her chair; her posture usually resembled that of a contortionist. Her handwriting, however, appeared to be as neat as that of those who sat "properly". Jim, who wore one of several different hats to school and kept them on during Free Time, very seldom had all four legs of his chair touching the floor at once.

Recess time came and, as was evident as time went on, was a typical recess or lunch break for Cathy. After her talking to the last child as the class left for recess, we got to the staff-room at about 10:20, five minutes into the fifteen minute break. Different teachers approached Cathy regarding a volunteer luncheon, the upcoming assembly, computers and school budget items. (Field Notes: 87,04,24)

{Since I taught using a reasonably structured framework, I was not sure what to make of my first observations. It was not until Cathy and I discussed the observations that I began to see and appreciate the meaning they had for her. I formed reflections after the observations, which in turn were brought forth in the ongoing conversational system.

A representation of the recursion in the research process is shown below in the series of arrays, where my learning about Cathy's teaching took place first through observation, L[1], of the environment, E.

$$\begin{bmatrix} G & G(G) & G(E) \\ E & E(E) & E(G) \end{bmatrix}_{[0]} \longrightarrow L[1]$$

The second array represents my learning more about Cathy's teaching while in conversation with her. The "subject" of the conversation is the triggering influence the observation had on me and on Cathy, shown by G(L) and C(L) respectively, and the interpretation each of us gave to that process while in conversation with the other, shown by G(C(L)) and C(G(L)).

$$\begin{bmatrix} G & G(G) & G(C) & G(L) & G(C(L)) & G(G(L)) \\ C & C(C) & C(G) & C(L) & C(G(L)) & C(C(L)) \end{bmatrix}_{[1]} \longrightarrow -L[2]$$

This conversation triggered a change in me, shown by G, at state 2, in the following array.

$$\begin{bmatrix} G & G(G) & G(E) \\ E & E(E) & E(G) \end{bmatrix}_{[2]} \text{-------------}> L[3]$$

The worlds I brought forth, G at states 1 and 2, during successive observation (or conversation) sessions were progressively different. Changes had been triggered by previous observations and conversations.}

Others' Opinions.

Included below are brief excerpts from what others on staff said regarding Cathy's teaching.

They said things like Cathy allows the children to "learn by doing" in a "warm and caring atmosphere" and encourages them to "take risks" in a "non-threatening environment." She is concerned about each "individual kid" and has a knack for "probing them to make them think." Gloria, an experienced teacher said "I really aspire to be more like her." The principal appreciates Cathy's sense of community and how she "integrates herself into different things" but is a little concerned because "there is a bit of a hazard in that she gets going in a lot of directions."

Cathy's Views.

In order that the reader may have the opportunity to see distinctions made by Cathy in describing her interactions the following discussion contains dialogue of conversations I had with her. The first conversation was about Cathy's relationship with Gloria, the resource room teacher.

> I really enjoy having teachers that I can talk to and discuss ideas with because if you don't have that you sort of get stagnant.
>
> I have been working with Gloria for three years. The ideas and experience she has offered have really improved my language arts.
>
> Together we have been trying to develop the staff in both computers and language. Her excitement about what I am doing sort of adds to my momentum, and my picking up on what she is doing adds to her momentum. In the end you get a better program for the kids because you are both learning.
>
> You can share with others on staff who have a particular expertise and support is there for you all of the time. You can go to these conferences, and you can pick up little things here or there, but you almost have to be on that track already. At school you have the context of the school as you are doing it. Once you get teachers sharing, a lot of creative ideas come out and the expertise helps because it illuminates a lot. (87,05,07)

{The importance to Cathy of "bouncing ideas off others" was a recurring theme. Because of the interactions between Gloria and Cathy, computer use expanded to include other teachers. Having context related expertise and in-service that includes on site support ensures that new ideas are more readily implemented.}

In the next section, Cathy discusses why she allows her students fifteen minutes of "Free Time" when they come in, in the morning.

Free-time.

> The basic reason for Free Time is to give them the idea that they have control of their day, rather

> than me having control. The teacher does have to control a lot of the day, because of system constraints; but by giving them some time to themselves I try to get them to think about being at school and what they are here for. Hopefully they won't feel that it is imposed. It is also to give a feeling of community. I am encouraging them to interact with each other and with me. It gives me the opportunity to be available to them, so that if they come in with, "My dog got run over" or whatever, then I have the time to just sit and talk. It is a natural part of the day where I am interested in what they have to say. I find that they really do come and tell me things, they want to share, but they also want to share with each other. There are kids that, if you had a really structured class, wouldn't talk from morning until night basically. Those kids are getting up to see so and so, joining in a game here and there and feeling part of the group.
>
> [R: Do you find that carries over into classroom discussions?]
>
> Yes, I think that if they feel comfortable as part of this group then they can take part better in discussions or group work. They also become more confident about themselves. The ones that are frightened about speaking out and saying what is on their mind can test a few of those things out during the free time. They might not be doing that specifically, but they do talk to other kids and they get positive feedback from them so their confidence is built. (87,06,04)
>
> [R: Another thing that we talked about was the fact that you drew upon the quiet kid, David, because he is a farmer, and you mentioned that it is showing a respect for his lifestyle.]
>
> If I show that I know a little bit about their life, I feel that I am telling them that I care about them. (87,05,17)

{Because the discussion was informal during free-time, topics that were relevant to the students provided the context for the interaction. Because of the group having been built up, there was a feeling of comfort and confidence such that all students felt comfortable in taking part in "formal" discussions. Cathy was better able to facilitate all class members taking part

> in formal class discussions because she became aware of their interests during free-time. Rather than being a hierarchical relationship it was one of equality, where each could be mutually influential.}

Some Lessons

The following section contains a description of several different lessons. Their inclusion affords me the opportunity to describe Cathy's teaching style using examples.

Grade Five Social Studies Lesson.

Because Cathy's class was a split grade four-five class, the grade fours went to another classroom and some other grade fives come to Cathy's class for Social Studies. Toward the end of one Social Studies lesson, Cathy gave each student a sheet with interview questions on it. They were to find someone employed in agriculture and interview that person. Many didn't know anyone in agriculture so the class decided, with Cathy, that anyone in the food industry would be okay. They were to have the interview done by the following Wednesday. (Field Notes: 87,05,05)

> I sure hope they do it. That's the problem when you ask them to do something out of school time. Next day I'll put each question on a chart, and they will put the answers on the chart. Then we'll look at the answers and see if each of the people interviewed answered in the same way. So they

> will see that there may be divergent thinking in certain areas or there may be a consensus. (87,05,07)

Cathy had whoever had done the Social Studies interview put the information on a chart (this happened on a day I was not present). I observed the following class and Cathy hung the charts up and told them that they may have different answers but that didn't mean that some were right and some were wrong.

Example of one chart:

What are the best features of living on a farm?

> Freedom and fresh air, lots of room to have horses, chickens and other stuff you can't have in town, no traffic, quiet, no pollution, you're your own boss, no noisy traffic, nice and quiet, not many rules, can raise animals.

What are the bad features of living on a farm?

> You might get snowed in, fire and nobody to help, no friends close for children, not enough rain, it might hail, fixing machinery, doing everything yourself. frost, crop damage, a long way to shop, crop damaged, weather, intruders.

Cathy, with the class, took the main ideas that were repeated on the sheets and generalized that idea. For example: snowed in, rain, hail, frost, weather, crop damaged together became "at mercy of weather." No friends and doing things yourself became "isolation."

A discussion ensued about what might be considered intruders. Jim said that his uncle was often troubled by hunters and hot air balloonists leaving his gates open and trampling grain. He also said that his uncle shot gophers. This resulted in a discussion about whether or not gophers should be considered intruders. Cathy drew in David, whose parents have a farm. David said the gophers were intruders because they ate grain and their holes were hazardous to livestock. (Field Notes: 87,05,15)

> [Cathy, talking about the Social Studies Lesson:] I picked the two interviews they would do so that the kids would have the same kind of thing to do but would have different information to share. It was to try to make the information as rich as possible without having them have to read and answer questions from the book. Using human resources is another way that kids should realize they can get information.
>
> So that we could have some kind of framework using information that they had gathered, I got them to put it on chart paper. Then the information was in front of them when we discussed it.
>
> As far as pre-planning, I couldn't, because I didn't know what kind of answers they would get, but we started with their answers from the interviews.
>
> I guess underlining all of that too is that I would specifically ask kids questions when I was aware of their background. For example Jim is a real hunter; he hunts with his dad and loves it. So when it came to anything to do with hunting and farming and intruders on the farm, I asked him because I knew he would have some information. David's parents have a farm. Every year he misses about two weeks of school while his parents go to the farm. Therefore, he has a lot of background to offer yet he is very shy. So it is an opportunity, not just for the class to get information that he has, but for him to come out a bit and he did quite a little bit that period.
> I wanted them to be able to take some information and draw something from it, using higher thinking skills, in my estimation, like synthesis. I wanted them to have the experience of gathering first hand data, but I also wanted a way of

> sharing it. I wanted to draw from that information. I knew that was the direction I wanted to go. (87,05,17)

{During the process of looking over what each group had written, a synthesis was formed and generalizations (reflections), were made.

Because spontaneity was allowed, the conversation generated more conversation. The unique knowledge of individuals was appreciated in this situation. The information was within the linguistic domain of the students because they had gathered it. The students had the opportunity to acquire information other than that from a text.

The interview became part of the world each child had brought forth. Cathy anticipated the opportunity for recursion in this process and facilitated it. She set up situations such that the product of one activity would again be part of the learning process as a subject to be talked about. The product of the interview activity was gathered together on charts as a new activity; the product of that activity (the charts) became the subject of the class discussion. Cathy expressed her anticipation as "I wanted them to be able to take some information and draw something from it ... synthesis.... I also wanted a way of sharing it... I knew that was the direction I wanted to go." The synthesis was the result of the sharing of all information. Cathy had to be flexible as she could not pre-plan since she did not know what kind of answers the children would get.

The recursive process is represented below in the series of learning situations, L[1], L[2] and L[3]:

$$\begin{pmatrix} S & S(S) & S(E) \\ E & E(E) & E(S) \end{pmatrix}_{[0]} \text{---------->}\ L[1]$$

where E(S), the interview is the student's, S, influence on the environment, E, during learning situation one, L[1]. This byproduct E(S) is called I, the interview, in learning situation two.

$$\begin{pmatrix} S & S(S) & S(I) \\ I & 0 & I(S) \end{pmatrix}_{[1]} \text{---------->}L[2]$$

The byproduct of learning situation two, the child interacting with the interview data, is I(S) which is called Ch, chart, in learning situation three where Cathy, C, actively facilitated the discussion.

$$\begin{bmatrix} C & C(C) & C(Ch) & C(A) & C(B) & C(A(Ch)) & C(B(Ch)) \\ A & A(A) & A(Ch) & A(C) & A(B) & A(C(Ch)) & C(B(Ch)) \\ B & B(B) & B(Ch) & B(C) & B(A) & B(C(Ch)) & B(C(Ch)) \end{bmatrix}_{[2]} \text{-->}L[2]$$

The chart is the focus of the discussion from which the information was synthesized and generalizations were made. The students and Cathy were influenced not only by the chart but also by each other's interpretations of the chart. I have not shown A(B(Ch)) and B(A(Ch)), the influence of the interpretation of the chart by students A and B on each other.}

Cathy felt her role was to "serve as a coordinator" for such discussions. She minimized her distance both physically and psychologically by sitting down and by acting as a learner in such situations.

An Integrated Approach.

During the 1987-88 school year Cathy's class stayed together for all subjects, rather than the grade fours going out for Social Studies.

> [Cathy liked this situation because:] I have more flexibility as to what I can do. For example, right now we are working on the theme: How can we conserve the planet? As a subtopic we will be covering the Social curriculum topic of "Should Canada share her natural resources?" The students have all been working on a "Thingamajig". We read a futuristic poem called "The Thingamajig." The other day we (the class) had a conversation, and it just went crazy. We talked about the future and I talked about what computers might be like in the future, perhaps programming themselves. Well

> we had a really good discussion, and then the "Thingamajig" assignment came out of that. They were to build a nonviolent futuristic something and explain it to the class. The things they built don't look really great, but what they _are_ is great. For example, Stephen built a model (the real one would be the size of the school) of a "Neuronspectroscope" with a projectile which would be shot off into space, and the projectile would go to Jupiter to mine minerals that are being depleted on earth. John built a Robot that serves food and put it on a remote control car. Wayne and Gene built a space station that would manufacture gases to rebuild the Ozone layer. What is good about all this is that skills can be brought in incidentally. For example, we did some writing, and we have a spelling list of the space words. The librarian is finding us some books so we can find out more about things like radiation and ozone. One thing that was interesting and exciting is that Bernie said to me today that maybe us learning is something like that computer programming itself. He must have been thinking about that since we were first talking about it a week ago. (88,05,10)

This exercise progressed into a hall display. On one side of the hall were their displays of space age things while on the other side were their displays relating to Canada's resources. Susan's display was of an oil well but resembled a shallow water well with a bucket. Cathy found this interesting, but also frightening because of the amount of class discussion that had gone on about oil wells and Susan not relating to that discussion. Cathy felt this emphasizes the need for open ended assignments in which the student has to do more than repeat facts in a rote manner. In this way the teacher can find out what the child really knows. (Informal discussion: 88,06,20)

{The 87-88 year's uninterrupted activity allowed Cathy's class to spontaneously engage in activities because she knew there would be continuous involvement. Integration of curriculum was possible because the class as a whole system brought forth a world enriched by several subject areas. The sense of community from classroom to the Earth was made possible because of this. The potential for recursion was much greater when the whole class was together for all subjects. Bernie's realization that "maybe learning is like that computer programming itself" was a profound reflection for a grade five student. This was brought about through his thinking about previous discussions.}

Students' as Experts.

This discussion with Cathy evolved from my observation that she used the students as "experts" in a Social lesson, during which the children cut pictures from magazines and categorized them. (I noticed that she did this on several occasions.)

> [R: I watched one group, and the categories just sort of evolved. Beth was in that group; and, when someone didn't know where to put something, he would hand it to her and she would place it.]
>
> There is that respect for her. I don't think that is a detrimental thing for them to learn. If there is someone there that they can use. For example, I used her yesterday because Jasmine came in late for math. I asked if someone could go through the math with her. Beth put up her hand and did it. She went through it with her. She didn't do it for her. Some of the kids wouldn't know how to do that. Beth is a very mature girl for grade five, and that is part of the respect she gets. (87,05,07)
>
> [I asked Beth what she got out of helping others and if she learned anything, she said:]
> B: It's fun and you learn something because when you help someone you have to know it too; I make

> mistakes too, and it helps me learn it better when I have to explain it. (87,06,02)
>
> [During another short chat, Cathy said:] Another kid can contribute to learning as much as the teacher does. (Field Notes: 87,05,05)

The following discussion is somewhat along the same line as the previous one. It revolves around the fact that Cathy had the students seated at tables and often working in groups. This facilitated the use of students as experts in a group setting.

> I encourage an atmosphere of us all being there together to learn. For the one doing the teaching, it is kind of a metacognitive kind of process when they have to tell the other what or how to do it. The other little kid may understand that kind of language more easily than the teacher's language. They are open and want to incorporate what the other kid has to say.
>
> When they get in groups, students really start respecting each other. For example, the written work of Kyle and Jim is not good; but both have really good heads. But the kids don't get a chance if it all goes through the teacher. So it's the self-respect, their own self-esteem and their feelings about themselves that's so very important. The academic progress comes after. (87,05,07)

{In a "student as expert" situation, the interaction is apt to be mutually beneficial because the students are close to the same level. The greater the kind of communicated interactions (written, oral, physical, or dramatic) allowed, the more likely the creativity of each individual is likely to be noticed and appreciated and thus enhanced. With the teacher at front, most communication goes through the teacher rather than among all class members.}

A Mathematics Lesson.

There were some days when I didn't have a chance to take field notes during class because I was so involved with the students. One such day was a math class during which there was much movement about the classroom, much activity and much noise. The students were measuring as many things in the classroom as they could and recording the measurements. There had to be cooperation because they had to share measuring devices and because they were measuring each other. (Field Notes: 87,05,15)

> [I asked Cathy about this style of teaching (learning by doing):] You teach a formal lesson, otherwise you can't give them any sort of basis on which to start, but I don't expect, when I am finished teaching, that they will really understand everything I have said until they have actually done something with it. Sometimes I have been so angry with myself because I have tried to talk something into their heads. One time was before they went into the computer room. I sat them down and said you need to know this, and I wrote it down and explained it all exactly how they would have to do it and I said write it down. Then I asked, "Any questions?" No, not one single question. We went to the computer room, and I bet there wasn't one kid that knew what was going on, but they had sat there and they were very nice to me, and they didn't say, "I don't know what you're talking about, I don't know why you're putting that there." It always shocks me to see the level that they are at. (87,05,07)

{Cathy was aware that lecturing is not a viable way to facilitate learning. Unless their is a link between the lecture and the world brought forth by the child the lecture will make no sense. After the "hands on" lesson real learning is possible but not before.}

Me and My Pigs.

The following conversation is about a lesson I taught. I had met the author of a story that was in an old grade seven literature text book. Because the grade fives were doing a unit on agriculture, I thought it would be appropriate to introduce it to Cathy's class. The conversation is included because it illustrates what Cathy, in the observer role, distinguished as important.

> [R: Could you talk about that lesson I did on "Me and My Pigs"? You read it and suggested to me that it was too difficult.]
>
> Yes, and you went through and simplified it and introduced it because you knew the author personally. That always means more to the kids, when you can add that bit in. So you proceeded with it. My job was to make notes. But as you were reading the story there was nothing to write, because you can't assume that just because they are quiet that they are listening. You have no idea what they are thinking until they start speaking. So when the discussion started, it was interesting because we had been talking about how recursion takes place. I observed you bringing one student's comments forward to another student's discussion. This made the discussion proceed in the direction you had in mind but you still worked from what they had said. You said, "Now think about what Elaine said" and took the discussion further, rather than saying, "No I'm not satisfied with Elaine's answer."
>
> [R: So building on one answer then.]
>
> Yes, and facilitating the communication between the children so that they listen to each other when they give answers rather than tuning each other out and just listening to the teacher.

> Mike had an opportunity to check out the word farrowing in the dictionary because none of us had a clear understanding of what it was. So that opportunity was given to him right then.
>
> [R: Uh, rather than in a Language Arts lesson where you're doing dictionary skills.]
>
> Yes, there is not much point looking up twenty different words in the dictionary to prove that you can do it. Those kids in the centre room that day checked in the dictionary to try to get the categories right, the mammals and insects and that. The dictionary was sitting right there. (87,06,04)

{This discussion discloses what was important to Cathy as she taught; this is shown by what she distinguished as important in the lesson. The idea of anticipating and taking advantage of opportunities was important to Cathy. Having dictionaries always available is a good example of this. Because Cathy had many years of teaching experience, she was able to anticipate what can happen and set the situation up such that many possible opportunities could be seized when they arose. Because the dictionary was available, the child could use it when a natural situation arose rather than having to wait.}

Evaluation

As evidenced in the discussions below, evaluation was problematic for Cathy as it is for most teachers.

> Sometimes in Social Studies I have given a test to see how many do know the provinces of Canada; can they use an Atlas to find these places? The test question might be, when you have found this place raise your hand and I'll walk around to see if they have it and mark it. I test the skills and knowledge but I do not give questions like, "Give the five reasons why," because they could memorize a list but still not understand the concept. (87,06,04)
>
> What is basic is getting to those higher levels [Bloom's Taxonomy]. I know he can read the story,

> but can he then read between the lines and make inferences about the story? That is where I would want to spend some time, on those upper levels, categorizing, synthesizing and some evaluation where they make some decisions too.
>
> [R: Do you feel that you are accountable?]
>
> Yes, but I find I keep less and less records the more I do this because I never look at them. I keep some if some person feels that is necessary for their kid, but I have never had a parent problem with this because the kids are usually so happy that the parents are happy. But I find it is not important if the kid gets all right on the spelling test; it is not a big deal. If they are using words and checking them and gradually improving, that's what we are after. I have a record of their work, and I can identify what a kid can do, and I can probably tell specifically which kid has which difficulty in which math skill or whatever. But isn't that what you keep all of the little records for? So a collection of their work is a record. We have to start saying that this file of work by this child is a valuable record rather than marks on tests.
>
> [R: Umhm, so you can see the growth in the student rather than growth compared to.]
>
> Yes and you do have a little bit of comparison because you do see the work of everybody. We still have to end up giving an "A" or whatever according to the school board. Is this kid doing average work for this grade level? You do compare in your head. This one is doing exceptional; this one is having difficulty, but after that it doesn't mean a lot at this grade level. I'm not so sure that it means a lot at any grade level but I don't have that experience. (87,06,04)

{Cathy realized that merely being able to repeat verbalizations in a rote manner is not evidence that understanding exists. There is evidence here that Cathy was aware that understanding takes time and is difficult to measure. A collection of a child's work is better evidence of the status of the child's understanding than is a mark on a test. However, Cathy was working within a system which required some kind of mark to be assigned the work.}

Centers' Room

During the period of time in which I was observing Cathy's class a centres room was developed. The idea had been originated in the fall by the resource room teacher, Gloria, in collaboration with the Grade two teacher. Cathy had thought it would be a good idea for the whole school to be involved and worked with Gloria slowly involving other teachers. I too became involved, and several visitors from other schools visited the centres room.

Many of the activities were open ended and the students could do optional activities after they did what was required. (Field Notes: 87,06,04)

> [The intern, Janet, had this to say about Cathy's involvement in the centres room:]
> J: Most of the division two stuff, other than the pond stuff, was done by Cathy. Gloria and Cathy put the majority of it together for the whole school. Gloria was more with the division one and Cathy with the division two, but they worked collaboratively with the other teachers getting materials together. (87,06,16)

> [Gloria, the resource room teacher, had this to say about the centres room:]
> G: I think that the centres room is an outcrop of everyone using the computers. I think that the two tie together very much. I started the first centres with the grade two teacher instead of taking an enrichment group. Cathy was really enthusiastic; she said, "Well if you're setting up centres why don't we set up some computer centres, and use the room next door to the computer room for the centres room." So Cathy had ideas and tried to integrate the computer room. Then the grade three teacher saw it, and she thought she may as well use it too. Cathy got Garth, the

> grade six teacher, hooked too. It was her idea to do the bugs. She said, "I'll get him into this." You see he does a pond study anyway, so she got that idea going that he would do some of this.
>
> G: I noticed in the staff meeting that we are committed to at least two themes in the centre room for next year. I think that is great. Nothing was mandated, it was just over coffee, lets do this. (87,06,04)

{This process of development of the centres room is an example of a system growing out of recurrent communicative interactions. The centres room was indeed dependent on and enhanced by the abilities and interests of different staff members. The more divergent the individual skills (Cathy--computer, Gloria--language arts, Garth--science) the richer the environment that can be created. They each brought forth a world which would enrich those of the others. Other teachers were drawn in by the enthusiasm of the involved staff members because communicative interactions took place in the staff room.}

My involvement in the centres room was triggered by the fact that our acreage had been attacked by tent caterpillars and many of the centres room activities involved bugs. I, therefore, thought the caterpillars would be a valuable addition. I brought in aspen and black poplar trunks and leaves and wrote an article explaining the difference. Cathy was very receptive to these and built a lesson and a centre around the materials. The class read the article and discussed it, relating the facts in the article to concepts that had already been covered in math and science (eg. diameter, measuring, metre, centimetre, categories, characteristics).

Cathy later discussed with some of the students, in the science centre, how they would find out which type of leaf the caterpillars would prefer. They decided that they could do an experiment. There was a short discussion about how to set up the experiment. The class returned to the classroom where Cathy had Lorne explain the experiment. Cathy, with the class directing her, prepared a chart outlining the experiment. The experiment went on for three days and, because the results were inconclusive, Cathy followed it with a discussion of how the experiment could have been better done. The class decided that more caterpillars and leaves would be required to come to any conclusion. (Field Notes: 87,06,01-04)

{This is just one example of how Cathy was receptive to what I offered. She used this activity to generate a science lesson. The opportunity would be gone once the caterpillars formed cocoons. The lesson was not teacher directed. The class decided how the experiment would be conducted and they carried it out. There is evidence here of the way Cathy got at higher order cognitive skills (evaluation) in the discussion of how the experiment could have been better conducted. She had the students reflect on their previous actions and evaluate them. The experiment and the discussions which followed is an example of Cathy anticipating possibilities and planning feasibly for them.}

The centres room continued in the 1987-88 school term and the special education classes were integrated with some of the regular classes for some of the activities. I chatted with Cathy about the centres room, the concept of staff sharing ideas and the integration of special education students.

> We have allocated sub time in our budget so teachers can be off during the day to speak to one another. Teachers begrudge spending evenings and after school at meetings, and there is enough of that already. So, if you want them to truly feel good about what they are doing, they need some time during the day. Of course, we all have the feeling that this is our class and we shouldn't be away from them, but if you look a little further, at the total picture of what you learn by sharing ideas with other teachers, you realize it is going to make the class situation even that much better. So if you have some opportunities to share, the communication will change. Generally, our staff room conversation is about interesting educational sorts of things. I think that, and the centres room, has really brought the staff out from behind their doors.
>
> It has had its growing pains and it will still have growing pains. It will be awhile; and, maybe, it won't even be there, maybe it will be something else. But in the course of looking at it, I think that every teacher on staff has grown in some way because of it. Maybe they would have grown in other ways, but to me the sharing part is so vital and the community atmosphere in the school is so much more since the centres room. The special education classes have been integrated with other classes in the use of the centres room. (88,05,14)

{Centres being enjoyed and seen as valuable learning experiences encouraged the development of more centres rooms. It had its "growing pains" as the relationships of teachers, aides and students fluctuated. All staff members experienced growth because of their being part of the centres room project. The atmosphere initiated in the centres room expanded to other situations adding to the "community atmosphere in the school." The special education students and teachers also became members of that community.}

Computers

One of the goals Cathy had at the beginning of the 1986-87 year was to improve staff understanding of how microcomputers could be integrated with language arts (primarily writing) and mathematics (primarily problem solving). To fulfill this goal, Cathy set up a computer lab, centralizing the computers in the school. She had teachers in as participant observers, when their class had computer time, and held inservice sessions after school and in the evening for the teachers. Since three teachers took over the computer program for their classes the following year, this program could be considered quite successful.

Another goal Cathy had was to provide a feeling of worth and belonging on the part of the students (all students in the school not just in Cathy's class). To fulfill this goal Cathy made the computers available to students in grades three to six, and helped students use the computer facilities to prepare cards and posters for special occasions. It was following a suggestion of Cathy's that computer work by students was shared at assemblies. (Cooperative appraisal: Principal and Cathy, 87,06,11)

[I discussed, with Gloria, Cathy's computer involvement.]

> G: One of the things that I work with Cathy on is getting some school wide projects going. For example, the centres room and, using the computer for more than just drill and practice. It just ties with the philosophy I feel we both have about kids and how they learn. I think our [Gloria's and the other teachers'] involvement started because we saw what Cathy was doing and what her kids could do. There are two teachers already who want to try it on their own; that is tremendous growth.
>
> G: The time was made available for us, and the help. Cathy told us that if we were stuck she would help us after school but we often knocked on her door during class. So the support system was built in; or, at least, we felt comfortable enough in asking her, I'm sure, very stupid questions. I admire her patience. (87,06,04)
>
> [Janet, the intern, discussing Cathy's role with respect to her involvement in computers.]
> J: I am really interested in computers. I have learned a lot seeing how Cathy integrates computer use into the curriculum. (87,06,16)

{Cathy's expertise was put to use as she interacted with several teachers during class use and inservice sessions. Because Cathy was always available to provide support, the teachers saw their involvement with computers as a possibility. The teachers slowly became more independent users. They did not have to struggle with manuals (a time consuming process) because they had Cathy's expertise readily available. Cathy realized that patience was necessary since change takes time (this also was evident in her interactions with children). The perspectives held by the other teachers with respect to computers expanded beyond only using them for CAI.}

Cathy: Summary

Unlike Shirley and Ann, Cathy felt that her first years teaching were not particularly successful. This lack of success was probably due to the fact that her teenage years had not included much interaction with children. The world Cathy brought forth was one which included teachers' control of students. It therefore, took Cathy some time before she started to interact with students as individuals rather than seeing them as "a whole mess of little faces" who had to be controlled.

As evidenced by the data, Cathy definitely grew to appreciate the individuality of each child and facilitated for other's appreciation by using the children as experts.

I immediately noticed the community feeling of cooperation in Cathy's class; and this something that she purposely fostered. Cathy maximized the chance for meaningful interactions with her students by going to their level physically (often sitting) and psychologically (getting to know them on an informal basis and often joking with them).

Cathy's sensitivity to the children made the classroom atmosphere not only warm and caring but also conducive to creativity and successful learning. Cathy not only anticipated opportunity, but planned for it by allowing a flexibility in her plans; thus her classes could have a spontaneity that would otherwise have been lacking.

The creativity of each staff member, at Glendale School was fostered. There was a community feeling in the school which was encouraged by the principal and enhanced by the interaction of staff members with their varied areas of expertise.

The invariant aspect of Cathy's perspective system appeared to be her curiosity and willingness to question and be open to new ideas. Throughout her career, she has sought interactions with others which would be reciprocally beneficial to both (from her going back to university to her involvement in computers and her looking forward to the upcoming collaborative project in her school). There is a risk here, though; as the principal said, "I know there is a bit of a hazard with that, in that she gets herself going in a lot of directions. There is a whole lot she is doing and she is having to juggle" (87,06,06).

Cathy indicated she is unlikely to change as she said, "I hope to always be open enough to not say, 'Yes, this is the end and this is the way things are going to be and this is the way my classroom is going to be'" (87,07,09).

CHAPTER V

SUMMARY AND CONCLUSION

Summary

Introduction

Children's experiences in schools depend, to a great extent, on their teacher's perspective system regarding education. Perspective system was used, in this study, to include what Shulman (1986) refers to as capacities, thoughts and actions. (See Chapter II pages 19-20 and 31-32 for a discussion of perspective system.) The purpose of the study was to describe and explain the perspective systems of three teachers, Shirley (a beginning teacher), Ann (a consultant) and Cathy (an experienced teacher). That description is in Chapter IV. In this chapter, the theory of Maturana is considered for its appropriateness to offer a new perspective for research on teacher perspective. This was done in two ways. First, the literature is briefly reviewed again. Secondly, a summary of the description of the teachers' perspective systems is made. These are discussed with reference to Maturana's theory.

Theoretical Orientation

My understanding of Maturana's theory oriented data collection and analysis; the following is an outline of that understanding.

Living systems are made up of components. The relations between the components are the organization of the system. The organization specifies what relations are necessary to make the system a member of a certain class. The structure of a system is the components and relations that constitute a particular entity and make its organization real. (Maturana and Varela, 1980, 1987)

The organization of a system is stable. If the organization changes, the system becomes a unity of another kind. However, the structure may, and does, undergo changes which are triggered by environmental perturbations. Perturbations are not to be confused with input or instruction. A system brings forth a world and specifies which patterns of the environment will be perturbational and what changes will emerge (structural determinism). Of course there may be some interactions which will be destructive to the system; these, again, are structure determined. (Maturana and Varela, 1980, 1987)

If two systems recurrently interact, such that, there is a structural congruence and mutual changes of state but maintenance of organization (identity), they are said to *structurally couple*. A social system is formed from the structural coupling of two unities which have nervous systems. The behavioral coordination that exists during such social couplings is *communication*. If these communicative behaviors depend on a particular history of social interaction, they are learned and form a *linguistic domain*. (Maturana and Varela, 1987) Humans, in social systems, operate in a *domain of language* which is the domain of congruent, co-ontogenic structural coupling.

A more thorough discussion of Maturana's theory is contained in Chapters II and III.

Review of Literature

A second look at some of the studies reviewed in Chapter I follows. This is done using Maturana's theory, even at the risk of giving a simplistic analysis and contrary to Maturana and Varela's own admonition that interpretation of observations be done only within the theoretical framework in which the observations took place. There is justification for so doing, however, because, in so doing, I hope to illustrate the power of the theory. For the sake of brevity, only a sample of the studies have been chosen.

Janesick (1978) views perspective as being a basis for constructed actions, thus, in her study, actors are treated autonomously because they construct the actions. In this study the broader term, "perspective system," is used and it incorporates perceptions, thoughts and actions.

Clandinin's (1985) "personal practical knowledge" is, I think, equivalent to what I have called "perspective system" and may be viewed as a self-maintaining system coupled with the social environment in that the "world of practice continually shapes the teacher's knowledge and, conversely, [reciprocally] ... the teacher herself structures the practical situation in accordance with her knowledge and her purposes" (Clandinin, 1985, p. 364). Clandinin found that teacher's practice involved calling forth images from a history; this seems to be similar to Maturana saying that systems bring forth worlds.

The "group" in the classroom of the teacher in Janesick's (1978) study could be regarded as a social system and autonomy seems to be evident in the creation, maintenance and restoration of it.

The six areas of influence (eg. time and administration) identified by Craig (1985) could be thought of as perturbations to the new teacher she observed. These and other perturbations were, from this observer's perspective, in the domain of destructive interactions for the young teacher; she did not renew her contract for a second year; she appeared to became a unity of another kind (not a teacher). Craig noticed the tension between preservice and inservice training and recognized the two as complementary triggering aspects in teacher development. The studies of both Craig and Everett-Turner have continued to be an influence on their perspective systems as they teach curriculum and instruction classes.

This study seems to me to support Sarasan's (1982) viewpoint that teachers lack a shared body of practical knowledge because of teacher isolation in their classrooms, with the qualification that this is not so in schools where teachers have the opportunity to interact. Of course, merely putting teachers together physically will not ensure sharing. Newberry's (1979) findings probably apply not only to beginning but also to experienced teachers. That is, working relationships develop between colleagues who share compatible teaching ideologies and teach the same grade. However, since experienced teachers have a broader view of curriculum, it would probably not be necessary that they teach the same grade . Ongoing working relationships, sharing and the resulting change (structural drift), would best be facilitated in the school atmosphere described by Little (1982) where there is support for discussion of classroom practice, mutual observation and critique, shared efforts to design and prepare curriculum and shared participation in the business of instructional improvement. I see this process as recurrent interactions taking place between two or more teachers whose perspective systems are structurally congruent and mutually perturbational. Such interactions would result in third-order coupling within a linguistic domain. This linguistic domain would become the domain within which further change (structural drift) could be discussed and anticipated. Although the language used by teachers may not appear technical it would clearly be the professional language used by teachers when in conversation about teaching. In this study, Cathy distinguished this as happening between her and Gloria in their exploration of computer use to enhance the language arts program.

Contrary to what Sarasan (1982) said about teachers' lack of continued growth, the three teachers in this study actively pursued interactions which would facilitate their growth because they did not feel that their professional growth was yet complete.

Do the preceding examples merely indicate that Maturana's words could be used to explain observations that could just as easily be explained by other theories? Possibly, but there is more in the shift to this orientation; it is more like a paradigm shift. Here paradigm is used in Kuhn's (1970) sense of a network of shared assumptions and conceptions. This shift is more evident when we regard studies done by researchers who seem not to view teachers as autonomous.

Lortie (1975) claims that no technical knowledge base in education can be transmitted because none exists. This objective viewpoint is transcended by Maturana's theory. For, even if there were a technical knowledge base, it could not be transmitted as in the input-output model. Teachers' knowledge evolves through coupling in the teaching environment and is exhibited in adequate conduct in that context. According to Feiman-Nemser and Floden (1986), teachers' practical knowledge is those beliefs habits and insights which enable teachers to do their work in schools. It is time bound; situation specific and oriented toward action.

If Mc Pherson (1972) had been influenced by Maturana's theory, perhaps he would have realized that the nonprofessional talk, he claims teachers engage in, is necessary for meaningful interactions between teachers and the discussions regarding the personalities and individual backgrounds of students are important and, in fact, constitute professional discourse. Certainly, the teachers in this engaged in much more professional conversation than Mc Pherson has indicated (even if we considered professional conversation to only include teaching strategies and curriculum matters).

Possibly, if educators such as Hall, Loucks, Rutherford and Newlove (1985) and Leithwood (1981) were to view teachers and students as autonomous, their perspective of how curriculum innovation could best be brought about might change. This might result in less emphasis on behavioral descriptions and identification of desirable end-points and more emphasis on facilitation of desirable interactions and respect for the world brought forth by participants during the process. If the autonomy of each individual is realized, the larger system benefits because of the resulting creativity allowed. This seemed to be evident in the case of all three teachers. Cathy's expertise with computers and Shirley's expertise in recreation benefited the schools in which they worked. Ann encouraged each teacher with whom she consulted to fit drama into their program in ways which would fit the context and their personalities.

Looking at people and practices in education within Maturana's theory forces one to view teachers as active participants in change rather than how Boag and Massey (1981) claim they have often been viewed in the past, as "passive recipients of change."

Method

The study was conducted in four phases. Phase I was primarily participant observation, with an emphasis on observation. Phase II involved participant observation, with varying degrees of participation, and conversation. The domain of language of this conversation was teaching (observations of teaching, teaching in general and past conversations about teaching). Phase III involved conversation, using the language of teaching and Maturana's theory. Phase IV involved analysis of data from Phases I, II and III. This analysis was oriented by Maturana's theory.

Understanding depended on recursion, which was a significant aspect of the method. There was a consensual coordination of our actions, where the actions were the teacher teaching--me observing, me teaching--the teacher observing, or both of us involved in a conversation about teaching or observations of previous conversations. When the content of conversations was about previous conversations such conversations became and are referred to herein as recursive conversations. At times, the conversations involved talk about other aspects of the professional life of teachers such as inservice, committee work, supervision or peer-tutoring. Teaching here is used in a very general way, that is, interactions with children in an educational setting.

Phase IV analysis involved dialogue, on my part, with the data. Reflections were formed after an observation or conversation. Conversations focused on observations or past conversations. That is, the reflections recursively became part of the same process that had produced them.

The nature of recursion in some conversations becomes evident when we look at conversations in a series of states, showing how one state of the conversation is applied to products of a previous state. The counters n, n-1 and n-2 indicate the states of the conversation, C and the states of the individuals, A and B. The self and mutually perturbational aspect of the conversation is indicated by A(A) and B(B) and by A(B) and B(A) respectively. In conversation C[n-1] both A and B have brought forth a world and both are at state n-2. The conversation at state n-1 was perturbational; shown by the participants entering conversation C[n] at different states and bringing forth different worlds.

$$\begin{bmatrix} A & A(A) & A(B) \\ B & B(B) & B(A) \end{bmatrix}_{[n-2]} \longrightarrow C[n-1] \qquad \begin{bmatrix} A & A(A) & A(B) \\ B & B(A) & B(A) \end{bmatrix}_{[n-1]} \longrightarrow C[n]$$

$$\xrightarrow[\text{drift}]{\hspace{12em}}$$

Recursion is thoroughly discussed in Chapter III.

Cathy mentioned that, on occasion, my asking her questions at the end of a lesson sometimes interfered with her "five minute breather" when "in the back of [her] mind [she was] thinking, 'What is coming next?'" At these times she was anticipating opportunities that could come about in order that she could plan for them. For example, Cathy had students go through the process of doing an interview. The written interview became a product. Cathy, at the end of that lesson, would reflect on how that product, the interview, could be brought forth during future lessons. The process then became the using of this product to make a chart (product). The chart was then discussed and a synthesis was formed. That is, the learning process was applied to a product of previous learning. Closure was brought to this process during a later lesson when the class, with Cathy, summarized what they had learned about the process (interviewing, generalizing, synthesizing) and about the topic (agriculture). Because Cathy did *not predict* what precisely would happen but rather anticipated many possibilities of what could happen, her teaching had a spontaneity which would otherwise have been lacking.

The arrays below are symbolic representations of the recursiveness of the *learning process* L[1]. The student is represented by S and the self-perturbations of the student and the environment are denoted by S(S) and E(E) respectively. The environment, E could include other students. If the environment only consisted of books then E(E) would be 0. S(E) represents the perturbational effect of the environment on the student and E(S) the reciprocal perturbational effect of the student on the environment.

$$\begin{bmatrix} S & S(S) & S(E) \\ E & E(E) & E(S) \end{bmatrix}_{[0]} \dashrightarrow L[1]$$

The interview data, denoted by I below, is a by-product of the learning on the part of the student. That is E(S) became I, the interview data. The learning process is again applied to the interview data.

$$\begin{bmatrix} S & S(S) & S(I) \\ I & 0 & I(S) \end{bmatrix}_{[1]} \dashrightarrow L[2]$$

The zero, 0, in the second array indicates that the interview data can not be self-perturbational since it is not alive. However it can perturb the student, shown by S(I).

The student changed the structure of the interview to a chart denoted by Ch below. That is I(S) became Ch.

$$\left[\begin{array}{cccccc} T & T(T) & T(S) & T(Ch) & T(S(Ch)) & \ldots \\ S & S(S) & S(T) & S(Ch) & S(T(Ch)) & \ldots \end{array}\right]_{[2]} \longleftrightarrow L[3]$$

The teacher has actively entered the learning interaction in the third array, above, and the perturbational effect of the chart on the student, S(Ch), and of the student's interpretation of the perturbational effect of the chart on the teacher, S(T(Ch)), results in a new understanding on the part of the child. Note that; in order to simplify the arrays, only one child has been represented here and the ellipses are included to again remind the reader that the arrays presented here do not include all of the possible components of these dynamic situations.

Since teachers need a "breather" to reflect on the learning process and how by-products can be used in future lessons, researchers using similar methods are well advised to be aware of this reflective process and try not to interfere with it.

The amount of participation varied in each situation and was governed by the teachers and the context. I participated least in Shirley's class and most in Cathy's class. As the method moved from Phase I through Phase III, there seemed to be greater structural congruence between me and the teacher. My involvement with Shirley dropped off at the Phase II level and there was greater involvement with Cathy than with Ann at the Phase III level.

Although Maturana and Varela do not discuss degrees of structural congruence, it seems reasonable to me that the notion of "more complex" congruence may deserve consideration.

The metaphor of a living jigsaw puzzle may make my position here more clear. Let me "equate" jigsaw puzzle pieces to people and reciprocally matching convexities and concavities to experiences shared in a phenomenal domain. I define congruence for jigsaw puzzles as: there is congruence between two pieces if they fit together. "Simple" congruence would exist between two pieces that merely butt up against each other. Complex congruence would be between two pieces with several reciprocally matching convexities and concavities. Now, in addition to their shapes, some pieces could be wooden-like, that is, have no plasticity; and some could be of a self-malleable material, that is, have much plasticity. One would expect two wooden pieces, which were originally together in simple congruence, to drift apart as they jostle about. They would not be mutually perturbational. Indeed, recurrent interactions between such pieces (components) could cause disintegration because they would chip away at each other. A puzzle (system) made up of such pieces would cease to exist. However, two self-malleable pieces with a history of complex structural congruence, could, during recurrent interactions transform to have even more complex structural congruence. This would be possible because the individual members have plasticity, thus facilitating the increase in the number of reciprocally matching convexities and concavities (the number of phenomenal domains in which there is coherence could increase).

The number of domains in which Shirley and I shared experiences was minimal. The number of domains in which Ann and I shared experiences was greater, while the number of domains of shared experiences before, during and after data collection, between Cathy and I was greatest and included an involvement in Maturana's theory. Therefore, I feel that the structural congruence between Cathy and I was most complex with respect to the process of this study.

I felt I knew Cathy better and learned more about her.

Increased complexity of congruence has its price. More time is required on the part of the participant. In the case of this study, Phase III required the participants to also learn something of the theory. This was an extra burden, that only certain people would be willing to take on. I don't think either of these requirements would be fair to request of a beginning teacher.

Regardless of the complexity of congruence, because of our plasticity Clandinin's statement held true. "The meaning created in the process of working together in the classroom, of offering interpretations and of talking together, is a shared one. Neither teacher nor researcher emerges unchanged" (Clandinin, 1986, p. 365). We were mutually influential.

In the thesis I have attempted to include enough data to give the reader a coherent picture of the teachers' perspective systems. In this attempt, I have allowed each teacher to speak for herself. Decisions as to what data to include and when to stop data collection were both difficult. During conversations, when repetitions were noted with nothing new evolving, I switched to another topic. If, however, either of us perceived a lack of coherence between the understanding we each had of a situation the conversation was continued or was returned to at a later time. When time constraints of the graduate program and time requirements necessary of the participants began to approach their limits I stopped data collection. I relied on the teachers' and other's reflections to provide a longitudinal outlook.

The product of data collection and analysis has resulted in a picture of each teacher's perspective system. Since each teacher is a coherent unity, components of the perspective systems are interwoven.

Recursion will play an important role in the influence this study will continue to provide in my future life, professional and personal. This is similar to Craig's (1984) expectation of her study.

> The circularity of the process, the fact that Gwen McDonald's voice and the voices of the many who spoke to the influences on her life-world, Carole Green's voice and the voices of her drama classes will continue to speak to the next curriculum and instruction class taught by this researcher, only begins the circle once again. (p. 258)

The Teachers

A description of the teachers' perspective systems is contained in Chapter IV. This description was done using natural language. However, the analysis of the data was influenced by my understanding of Maturana's theory. What follows is a more explicit use of Maturana's theory to explain some of those data.

The unique perspective systems of the teachers unfolded as I observed them and as we shared in conversations. In her initial teaching each teacher brought forth a perspective system which had undergone transformations through many previous structural couplings which formed the unique history of each teacher. Shirley's early interactions included much experience in recreational type activities in which she participated or taught. These were conducive to Shirley being able to quickly enter into social systems with her students. Ann's early development (particularly her professional training in England) included many experiential activities with children. This, plus the complementary aspect of being encouraged to build on the experience of children, enabled her to incorporate into her perspective system the principle that "what you experience you can talk about, and what you can talk about you can write about, and what you can write about you can read about" (87,02,24). Cathy, brought to her early teaching an idea that teachers must be in control. It took a couple of years before Cathy's perspective system, aided by the response of students to this control, allowed her to need less control and to encourage the individuality of her students rather than treat them "as robots" (87,03,29).

There were several themes that were recurrent, not just within the data for each teacher but also across data for all of the teachers. One of these was that all three thought that students' positive self-esteem was very important. In order to foster positive self-esteem, they realized that they must get to know more about their students. Ann learned more by interacting with the teachers (her students) one-on-one during consulting sessions and by organizing inservice projects so that she was in a school for a lengthy duration. Cathy increased the possibility of getting to know her students by having 15 minutes of free-time every morning; during which, she would chat with students. Shirley did not set aside a particular time nor activity but got to know them by having "private conversations with students" and "by not judging them" so that her students would "pretty well share anything" (86,10,15). All three teachers knew that recurrent interactions were necessary precursors to getting to know the students. Knowing their students better facilitated the likelihood of the teachers having adequate conduct with respect to their students.

There was an aspect in the perspective systems of all three teachers which is complementary to the importance of positive self-esteem. That aspect is the wish to bring about a sense of community.

Ann primarily concentrated on the school as the community with the teachers and classes being components and she encouraged sharing among teachers and between classes. Ann found school based inservice to be more facilitative of change than "one-shot" conference type inservice. This perhaps was due to the fact that the recurrent interactions of school based inservice facilitate a community in which the teachers and consultant could communicate. Shirley's community was primarily her class with individual students being components. Cathy's sense of community started with her class, and continued to the school, the school system and the home community of the children. Both Shirley and Cathy took active parts as members of the staff community.

An important part of the sense of community was the amount of flexibility allowed members. All three teachers had to work within the structure of the school. This is a necessity when materials and equipment are shared and there are time constraints. However, both Ann and Cathy allowed more flexibility for students than did Shirley. During Cathy's "free time" (see below) students could do pretty well as they pleased, as long as it didn't interfere with someone else. Ann's students (teachers) were free to apply or not apply what she had demonstrated in whatever way they saw as being appropriate. During Shirley's "choice time" her students had to choose from one of the choices she listed on the board.

During the Free Time, the children in Cathy's class were given the opportunity to interact while in a non-threatening situation. All members were on an equal footing because they were doing what they wanted to do. The system formed during this time was carried into formal classes and the feelings of ease and belonging created during Free Time continued. The language established during the social interactions could be used in the more formal class setting (eg. David knowing about farming).

Another aspect of perspective systems that is closely linked to the amount of flexibility allowed is spontaneity. By spontaneity I mean that which is not constrained nor compelled. Although all three teachers felt the pressures of getting through the curriculum, both Ann and Cathy allowed for, in fact, planned for spontaneity; whereas this was not as strongly evident with Shirley. Because of their experience, Ann and Cathy were able to anticipate many possibilities and this allowed spontaneity to enter activities. As Kay, Cathy's aide said, "We go for something and if it doesn't work we scrap it" (87,06,04). One example of Cathy purposely planning for spontaneity was in a social studies class during which she coordinated discussion of student gathered data. Ann, talking about her role playing during discussion with students, said, "This had to be spontaneous because I didn't know what ending they would come up with.... I know that role is always possible, so I can use it spontaneously" (88,04,26). There is evidence that Shirley, with more experience, will allow for more spontaneity since she allowed for it in Physical Education and Health, the two subjects in which she seemed to feel most comfortable. Shirley also talked about "teachable moments" and doing something "if it is important for them [students]" (87,04,07). It could be that Shirley and I were simply less congruent, therefore less spontaneity was allowed. It could also be that, because she still did not have a permanent contract she felt she did not want to risk losing control of the situation.

Something that ties in with spontaneity is the use of children "as experts" rather than information being doled out by the teacher. Even though they found it risky because of its unpredictability, Ann often encouraged teachers to use children as experts and Cathy used children as experts because, "Another kid can contribute to learning as much as the teacher does." There was little evidence of Shirley's use of the children as experts. Perhaps this, also, was due to lack of experience; and as Shirley, referring to the future, said, [she would] "have a broader more rounded" (87,05,21) view of the curriculum. This will probably give her more confidence to allow for spontaneity and allow students to be experts.

All three teachers realized that any significant change takes time and exhibited patience while waiting for evidence of change.

In addition to the pressure of getting through the curriculum, all three teachers felt that evaluation, particularly normative evaluation, was constraining. They all would like to, as Shirley said, "evaluate on improvement at their own level," but "the final thing is in comparison to the rest of the kids." Cathy was a little less concerned about normative evaluation than was Shirley. Cathy kept "a record of their work and can probably identify what a kid can do and ... tell specifically which kid has which difficulty in which math skill or whatever." And as she said, "but isn't that what you keep all those little records for?" (87,06,04). Ann, of course, had little say in how the teachers evaluated students; she worked in the structure that was there and acted as a broker to change that structure.

Maturana and Varela (1987) had this to say about evaluation:

> The evaluation of whether or not there is knowledge is made always in a relational context. In that context, the structural changes which perturbations trigger in an organism appear to the observer as an effect [the organism can have] upon the environment. It is in reference to the effect the observer expects that he assesses the structural changes triggered in the organism. (p. 174)

Perhaps evaluation is problematic because different observer perspectives can give rise to incompatible expectations.

Something closely connected to evaluation, is the relationship the teachers felt they should have with parents. Both Cathy and Shirley exhibited that they wanted a partnership relationship with parents and encouraged such a relationship in communication with the parents.

Of course, this communication took place within a domain of language. Language played an important role in communication with parents but also in many other situations. Body language was important to all three teachers. Shirley used body language, "the look," to communicate displeasure. Ann was aware of teachers' body language and used it to gauge what they said. Cathy used the body language of sitting down to get physically and, therefore, psychologically closer to her students.

There were some occasions when the teacher felt there had been lack of coherence in the understanding they had of a situation and that held by another person. All of the teachers used verbal language to clear up such misunderstandings, for example: Ann, when a teacher had written, "Ann forces you to do things," discussed this with the teachers and said that she was really trying to get away from control and force. The teacher said, "Oh, no! I meant force as in energy." The force was not seen as "input" force but as a triggering force. The teacher had been swept along willingly. Shirley cleared up a misunderstanding, when a boy thought she told him he would fail; and Cathy, when talking to the father of a student about a girl being allowed to take swimming lessons.

There were invariant aspects in each of the teacher's perspective systems. Shirley's was her positive attitude. Shirley found a need for a structural change in order to maintain the positive aspect of her perspective system. Although she had never been one to "rock the boat," she found she had to be more assertive to counteract the negativeness of others. Ann's invariance was her sense of responsibility; even though she changed positions several times, Ann always more than fulfilled the responsibility in each position. Cathy's invariance was her continuing to search for interactions through which she could grow.

Conclusion

Maturana (1987) said "Everything is said by an observer." How true. Although I tried to view each of these teacher's worlds and came to conclusions fairly, the process took place from the perspective of the world which I brought forth. Therefore, this thesis, which took form over three years, took form within the phenomenal domains which I chose to distinguish. Another observer would have brought forth a different world and may well have come to different conclusions.

Questions

Each of the research questions are briefly addressed below.

1. What are the perspectives these three teachers have toward teaching?
   These have been discussed thoroughly in Chapter IV and are summarized in this chapter.
2. How do these perspectives guide their actions?
   It is difficult to tell if the perspectives guided actions or actions triggered structural change in perspectives. However, there was evidence indicating that both are components in an autonomous system since there was a definite level

of organizational invariance brought about by the coherence between the two.

3. What has affected and continues to affect the development of their perspective systems?

   It seems to me that the teachers were affected only by those interactions which they saw as not being possibly destructive to the invariant aspect of their perspective systems.

4. What aspects of these teachers' perspective systems remain invariant?

   Shirley's positive attitude seemed to be the relatively stable aspect of her perspective system. Indeed, if I met her at some future time and she did not seem to have a positive attitude, I would say, "That is not Shirley."

   If I chatted with Ann some time in the future and she failed to refer to responsibility I would say, "That is not Ann."

   Cathy would, in my observation, not be Cathy if she were not searching for perturbational interactions. Indeed, in each case, the organization of the perspective system would have been changed, each teacher would appear to be a different person--have a different identity.

5. What can recursive conversation offer to enhance the research?

Recursive conversation was involved both in the theory and the method. It enhanced the research in such a way that the very conversation became perturbational to the participants. It was, thus, not only a method of finding data but also of generating data.

6. How can Maturana's theory enhance research on teacher perspective?

   Research oriented by Maturana's theory requires that more respect be given to teachers' autonomy. They will not be viewed as "passive recipients of change." The theory transcends cause-effect, a search for something other than causes is necessary.

Implications

Implications For Preservice Teacher Education

Implications are always tenuous. Those drawn below are suggested by the present study and if followed could facilitate a qualitatively different program.

1. This study seems to suggest that coherence between the theoretical and practical components in preservice teacher education would enhance that

education. For example, in the case of Ann, her practicum experiences were linked closely to her curriculum classes. This coherence could be facilitated through true collaborative efforts between professors of curriculum and instruction classes and school teachers responsible for practicum experiences.

2. The duration of school based activities, for preservice teachers, if lengthened beyond the present 13 weeks could provide:
   a. an opportunity for recursion to take place in the learning process (theory and practice) in which the student teacher is involved.
   b. for a complexity in the congruence formed by the student teacher with the class and teacher.
3. Language used not to make linguistic distinctions of linguistic distinctions on exams but rather used as a vehicle for recursion on experience may be seen to provide meaning for the linguistic distinctions.
4. With smaller class loads professors could have some way of coming to know students in order that links could be made between theory and the experiences the student has had.
5. Commitment on the part of the administration to changes would perhaps facilitate the coordination of those changes.

Implications For Inservice Teacher Education

1. School based consultants may be more successful if they have an awareness of the structure in the school (relationships between time, teacher, student, curriculum, materials etc.).
2. School based inservice seems to be more facilitative of change than conference session type inservice because it is context related, which adds to the coherence of activity and theory.
3. Peer inservice is valuable because the interaction is likely to continue with the support system built in.
4. School based consultants might better serve teachers needs by:
   - a. keeping in mind the complementarity of demonstration and consultation.
   - b. not having their own agendas drive inservice sessions but, instead, meeting the expressed needs of the teachers.
5. Curriculum change would seem to require structural change on the part of teachers. This structural change requires coherent coupling with the new curriculum which takes time. Perhaps curriculum which fosters recursion would involve the teacher in such a way that the structural change would

occur naturally. However, behavioral change may be feigned if there is a presence of pressure to change; and disappear as soon as the pressure is released. The test is time.

Suggestions For Future Research

I was influenced by Maturana's theory as I collected and analyzed data for this study. I therefore, make suggestions for future research with both that and the findings from this study in mind.

1. Theory: I put forward below a tentative theory of teacher perspective. I feel its various aspects warrant further research.

   The findings from this study seem to say that in their initial teaching experiences, beginning teachers bring forth, perspective systems which have undergone transformations during previous structural couplings. Interactions in primary social systems (family) seem to offer many perturbations that trigger structural transformations and, thus, the continuing formation of the perspective system. From this observer's point of view it seems that, interactions in secondary social systems (school, university, jobs), particularly if they are context (school/education) related, will also trigger structural transformations relative to perspectives on teaching. Interactions will be more likely to trigger change if there is: firstly, a coherence in the interaction, that is, between the language and action; secondly, if the interaction is recurrent and, thirdly, if there is a complex congruence in the structural coupling resulting from the recurrent interaction.

The teacher's autonomy will be maintained while changes take place in the form of structural transformations of her/his perspective system. This will be evidenced by stability of organization during recursive generation of the components of the perspective system (capacities, thoughts and actions). Some structural components may stay relatively stable. The structure of the perspective system will govern what changes will occur following perturbational interactions. Languaging with self and others will play an important role in the transformation of the perspective system.

If the teacher is employed in a system which exists for the members of that system then the teacher's creativity will be amplified. The teachers and persons with whom the teacher forms social systems will be mutually perturbational, triggering change. The degree and type of change will depend on the structure of the perspective systems of each person.

2. Method: With respect to method, two suggestions seem most pertinent:
   a. A recursive research method including recursive conversation if used in data collection could play a significant role.
   b. An extensive period of time set aside for the research could facilitate the likelihood of researcher and participant operating in the same domain of language and could foster a more complex congruence.

3. Topics to be researched: This study has indicated some areas of research that may be fruitful to pursue in more detail. These are presented in the form of general questions.
   a. What are the qualitative differences between the various types of inservice: conference, school-based, peer, informal, return to university, etc.?
   b. What are the qualitative differences between various university preservice teacher education programs?

c. How can school based inservice best be facilitated?

d. How does learning differ when children use home made manipulatives as compared to commercial manipulatives? (Home made manipulatives meaning those things with which a child has already coupled.)

e. How does structural change (with respect to adequate behavior as an indicator of knowledge) come about in children as they learn?

f. Could a teacher's perspective system be regarded as an autopoietic system?

g. Is there something more to the anticipative planning that both Ann and Cathy practice? Could a further explication of this notion, which might be referred to as recursive pedagogy, be useful?

CHAPTER VI

EPILOGUE

This epilogue is a reflection, the product of recursive conversations with the participants about how they were influenced by their being part of such a study. I have let the teachers talk for themselves and then I have made some comments, at the conclusion, about how the study triggered changes in me.

Shirley

Shirley found the beginning teacher project disruptive because a substitute teacher filled in for her during the interview time. At one time she wanted to quit the project. (Informal conversation: 86/11/19). She later decided to "see it through." I had not discouraged her from quitting; I merely listened to her feelings about it. At the next interview she shared more feelings and insights with me.

> I mentioned it to you this morning because I did some thinking this week about the project and I thought it would be good to have it in. At the beginning of the project I was asked if I would be in it and I felt honored. September until December, every Wednesday, all day observation and an enrichment teacher would fill in for the interviews. It sounded okay. But when there's a person watching you, you are not yourself. It makes you nervous but its good in a way for you to get used to it, I guess. Well then we got working

> together and week by week it was okay until my kids started bucking the system. With me out of the class for half of the afternoon [for interviews] there were discipline problems with the enrichment teacher. So I had to go through meetings with her and the principal. I felt more stressed in November than I did in September or October and I felt like it was getting to be too much. I talked to you about it and I felt better. I think this week I've realized there's going to be several changes that happen when I teach throughout the year and my class is going to go through different things. I have to remember not to take what my kids do or what other teachers say about my kids personally. I automatically jump to the conclusion that I should be able to better control things they do. If they are my class they shouldn't be behaving like that but that is not the way it can be. So in that way it [the process of being in the project] is helping me. I've actually become conscious of something that I didn't really even know was bothering. I think being in the research project made me realize it faster; maybe it would have taken me a year and a half or two years to realize. (86/11/29)

Approximately a year after I completed my initial data gathering with Shirley, I shared the themes that had emerged and we discussed her involvement in the project and the method used.

> [R: With the other teacher (Cathy); I went into her classroom and interacted more with the kids and with her and I felt she felt comfortable with that. Can you comment on that?]
>
> I don't know if I would have been ready for that, it being my first year, letting someone else come in, when you are kind of going through it for the first time, you don't know which way it's going or anything so I don't think it would be fair to compare. But I think that you as a researcher and me as a teacher, we would both get a lot more and the kids would too.
>
> [R: You might have felt threatened by it.]

I think that, being a first year teacher, you're slightly insecure. You want to be in control, not share the load because you don't know yourself, even, how your lesson is going to go because it is your first time.

[R: Yes, I don't think that would be fair to do to a beginning teacher. Do you think that you would be comfortable with that this year, or do you think...]

I think I'd need another year, I could do it in bits and pieces but not all the time.

[R: Last year this project was a real pain.]

Not the whole time. Just toward December.

[R: Well did you get something out of it, too?]

In ways.

[R: Well, I want you to say, "It caused me to reflect on my teaching." (laughs)]

(Laughs) Well it caused me to reflect on my teaching. (more serious) Well it did, didn't I say that before?

[R: Can you elaborate on that. Do you think that some of the things that were brought up in our discussions caused you to think differently?]

Not differently, I think that you reflect back when you talk about something it brings it to a more conscious level, just like when you go to an in-service.

[R: Okay, given that you don't think a beginning teacher could cope with that much interaction do you think that was about as close as I could get?]

I think you are lucky if you get a beginning teacher that will do that and feel good about it.

[R: One thing that comes to mind is when the extra person was in the classroom, that was a total fiasco as far as I was concerned. [The project manager sat in on one lesson and the follow up interview.]

[laughs] What about the kids? I asked for volunteers, they sat there with their arms folded (folds arms). Please volunteer because this woman is going to be in here for twenty more minutes and this is basically my lesson rapped up now.

[R: So were there things that I did that made you feel uncomfortable...]

No, because you just sat at the back of the room and watched, I got quite comfortable with you being in the room because we could laugh afterwards and stuff, I enjoyed our little chats and that. But I took on so many things and so many people evaluating me and the school evaluation, it wasn't the project it was everything and I was just overwhelmed and as time went on I just got more tired. So as time went on I just wanted everyone to leave me alone and let me do my job. I'm doing a good job.

[R: Just let me close my door and teach.]

Just let me teach and have fun with my kids. A teacher that has several years experience was complaining in September about last year and the school evaluation and said that if she had been a beginning teacher that would have finished her.

Ann

I trusted you because we had worked together and it didn't matter if I failed. I knew you wouldn't think less of me if I failed. Your being there for the workshops was a support and an affirmation of what I was doing. It provided me with a lift, energy. When a person does consulting work it is difficult because you don't have a colleague to bounce ideas off of. Even though you didn't know much about drama you know about teaching and kids and you could see the results I was getting. You saw it happening so I didn't have to report and "blow my own horn." When I told you about other workshops and teachers I had worked with you could relate to them because you saw it happening.

I also trust you enough not to be just a yes person. If you didn't agree with what I was

> saying, you would say so. That was even more affirming.
>
> With respect to Maturana's theory, it gave words to some of my feelings and thoughts but I'm glad I'm not having to do it.

Cathy

The following are excerpts from conversations I had with Cathy about her involvement in the research.

> Each time we have these conversations it is really wonderful for me because I get to sort of bring back the kinds of things I am trying to do so I remind myself that I am trying to do those things and why I am trying to do them. You will say, "Well what about that," and I will have to rethink in your terms or whatever.... Some days though, from my point of view when we are doing a lot of chatting in between I found it exhausting because I have to have those sort of five minute breathers. I don't always plan everything out in advance and I have to be always deciding what it is I want to do and what direction I want to go in next. If I am at that point and we stop for a little chat then I sort of get flustered because I haven't had my thinking time and my thinking time is very much a part of my day.
>
> [R: Right now you are putting your hand in the circle.]
>
> Umhm, the recursive self-conversation.
>
> [R: So part of your planning and your onward movement during the day is recursive...]
>
> Thinking about what has happened in this subject now, thinking about how the kids are today, about what I am going to do next, and what direction I want it to go in. There is usually a five minute breather time, it is not a quiet time because I am usually going around helping a kid with this or that, but in the back of my mind I'm thinking about what is coming next. So I find that a little bit distracting for me. So I think that had we not stopped to chat that would have gone

differently. That's something to be aware of when you are doing this kind of research, just when I'm finished talking that is not the end of the lesson for me.

[R: That is a good point. So if a person were doing this sort of research, you have to give each other space to reflect on what has gone on.]

And the kids are really comfortable and you have really assisted me a lot here in the classroom with materials and that is great it is wonderful. I think it would be great to always have more than one teacher in the classroom because of the communication and the stretching of ideas, especially if you have different strengths.

The following conversation took place some time later but is a recursion on the same topic.

[R: You said that it is neat that you get a chance to talk but at one point you said to me that you don't want to talk about it right at the end of a lesson.]

I think what is happening, when you are teaching your class and the kids are maybe working on their own for a while and you have time to step back for a minute, that time is kind of time for a teacher to do some recursion. You like to have that time to think about what was good about what you did and what was not so good about what you did and is this the line that I want this to go in. What will I do tomorrow to keep going in this line or what will I do to change the direction to a more suitable direction. It is not that you don't want to talk with someone else but you want that time to think about the children and the lesson and the program and the time involved and how many more days you have and all those things that impact on what you are doing and make decisions right then.

[So if I am interjecting and asking questions...]

Then that is delayed.

[R: Even though it might have something to do about what you are thinking about at that time, do you think it could become too much of a perturbation and you would become disintegrated as far as that lesson goes?]

Yeah.

[R: By your mentioning that to me you were not letting my questions be perturbations. So at the end of a lesson...]

I'm closed to perturbations and reflect on what it is that has happened. You have been open to the responses of the kids and you have been open to the lesson and all these things and maybe it is time to reflect.

[R: So isn't that protecting yourself, by closing to me or whatever researcher?]

Yes, it doesn't mean you don't want to share with the researcher, but not at that time. But if there is someone around quite a lot, you want to say, "Let's talk about that at lunch time or after school because right now I have all of these things that I am trying to cope with and your's is important but not as important as these."

[R: I talked to my advisor about this I told him that I was embarrassed that you had to tell me to back off. I guess I was embarrassed because I feel I should have had more respect for you.]

But you are the observer and you are observing my actions and my actions were not visible, they were taking place silently within my own head.

[R: Your thoughts weren't visible so I thought you weren't doing anything.]

You thought that this was an appropriate time to talk to me and I don't think it is anything to be embarrassed about, it is sort of a natural thing for an observer and how could you know that is what I was doing unless I told you or unless I did it to you. If you were teaching a lesson and I did it to you, you might come back and say, "Did that bug you as much as it bugged me?"

[R: So I was looking at it as an opportunity to ask you questions.]

But you also gave me the opportunity to say that to you, I didn't say it to you right then but I did say it during an interview. I didn't say it to you at the time because I didn't even want to be bothered saying it to you at that time because I wasn't even in your space. I didn't want to be thinking about your research, I didn't want to be thinking about what I looked like to you, all I wanted to do was stay with what I felt was important at that time. So I think that in this kind of research it is important to have those opportunities to ask did it bug you or whatever.

[R: Or how it is affecting you.]

Yes, so you can be a more sensitive researcher.

[R: I think that is important, how can this kind of research not be an imposition.]

Well I certainly have not found it to be an imposition.

[R: Well can we go to that now, I presume that you have enjoyed it in part because it has helped you in your research. Also do you think that you have become a better teacher through it?]

Well I think that the more you reflect, and if you are trying to do the things you want to do... you have these visions of yourself and what is important for your class. Sometimes you might be sick of the whole business and be tired and go trudging off and do something that is less demanding. But generally you want to grow within what you have these strong beliefs about, otherwise teaching becomes a job and I don't think that teaching is a job.

[R: As a career that you're growing in?]

Yes, a career that you are growing in all of the time and each year you are doing something better, each day you are doing something better for a kid that you didn't do the day before.

[R: Keep growing?]

Yes, keep growing. Especially if people question. Question in a reasonable way. You confirm, you reflect, you look at it from slightly different points of view and it either confirms things or you decide gee maybe I would like to do things a little different, so change can occur and you can move up to that next level. But it takes time and often you find that teachers don't have anyone to talk to about these things. I am really fortunate, I have had you, I have had Gloria [resource room teacher], I have had Sandra [principal], and I have had Kay [teacher aide]. Within the last three years I have had more people to bounce ideas off. And I have had more people that question, that question with an open mind.

[R: Do you think that is important that they question with an open mind?]

Oh yes, because if their mind isn't open you don't feel the interaction will be mutually perturbational, so what is the point of talking to them.

[R: Do you think my doing some of the things I did, bringing in stuff and doing a couple of lessons, helped you open up to me. I'm comparing it with phase I, I didn't interact within the classroom much at all.]

The drama one was the one that I enjoyed the most because you were nervous. You had said a couple of times, "Well it doesn't bother you to have someone in, does it?" And it really doesn't but under the surface it does. [I had done a demonstration drama lesson.]

[R: So when I was nervous doing the drama...]

Well, I guess you had tried to put on the other shoe, [participant] it would be easier for you as a researcher to stand back and make all these comments about me doing these things, but the fact that you were willing to take the risk and let things be perturbational, get up there and try something that you hadn't done before. The kids didn't know you were nervous, but I knew. I think it sort of relaxes the whole thing.

[R: So I could empathize with you.]

Yeah, I realized you do have an empathy, you're not just saying, "Yeah, yeah." The roles had switched and I felt glad that you seemed uneasy because then I knew I could talk to you about that and knew you would understand. I thought I wasn't feeling all that uncomfortable but there is that little part of you that is aware there is another person in the room and you want things to go well. The other things with the kids ... I think anytime someone has an impact on the kids, it has an impact on me and I think you have had a really big impact on a lot of them.

[R: Just by doing a few things for them.]

Yes, and just talking with them, joking with them, teasing them or whatever. I think that is neat and I like to share in that kind of thing. As far as the individual activities, they didn't have a big impact on me but...

[R: Just the fact that I did some things. It could have been anything, I could have trucked in something other than caterpillars and trees?]

Yes, but you showed a genuine interest in, uh, I guess me too. Those lessons were initiated by me but you fit activities into what I was doing and fit it into what was going on in the class. You were providing support but not providing support by saying, well I have these activities and you might want to use them, I might interpret that as pressure to do one of those.

[R: So could we look at as I brought in activities as part of the community that you had already established in the class?]

Yes, for sure.

Gwen

This study has triggered changes of state in both my perspectives on teaching and in my perspective system in general. These changes take time and are still in the formative stages. When I was a classroom teacher, I thought I was reasonably successful; after seeing these three teachers in action I realized there was room for much growth.

With Shirley I realized the importance of a positive outlook. I have always been a reasonably critical person, both of myself and of others. Shirley's philosophy of "positive makes positive" has had a great impact on my perspective system. When I catch myself being negative I try to force myself to be positive and I like the results. There are still many days, though, when I reflect on the previous day's activities and realize where I have been negative; old habits die hard.

Tied in with my critical outlook was a fairly strong sense of responsibility. I thought that if I saw something I did not like, it was my responsibility to change it. Because I saw Ann nearly destroyed by her sense of responsibility I have grown to realize that it is not my responsibility to "save the world." Another impressive feature of the perspective systems of all three teachers was their tolerance for the viewpoints of others.

Through the research process I realized that change takes time, and patience is of the essence. This has had a great influence on both the professional and personal aspects of my perspective system.

While I was still teaching, an ex-student told me that I had been a better physical education teacher than math teacher. That has bothered me for several years. I was well prepared for math classes and did a lot of marking and had everything systematized for my students. I realized, after watching Cathy, that I had done my students a disservice by forcing them to do things "my way." Cathy's planning for non-structured activities is very conducive to risk taking on the part of students. She has what seems a natural tendency to integrate curriculum, and her lessons are structured in such a way that opportunities may be seized. In this way the natural structural drift of classroom members (including herself) is allowed to influence the flow of the lesson rather than it being lesson-plan driven. This has made me realize that all things do not need well defined structure; however, not being sure what is going to happen next and being continually perceptive to subtle changes in class members is quite exhausting. There has to be a balance between going with the plan and going with the flow.

As I return to the classroom next year, I hope to practice what I would like to refer to as recursive pedagogy as practiced by both Cathy and Ann. I will set up situations in my class in September such that the learning that will take place later in the year may be applied to the products of the September learning. I will not be able to predict those products and will, therefore, have to be flexible.

In general, this study has triggered a change in my perspective system in that I try to be always consciously aware of when I am not allowing an interaction to influence me. Whenever I say "Yes, but", I remind myself to reconsider. I have also spoiled less of my sons' experiences by discontinuing putting my agenda on their experiences. I realize that they will bring forth their own worlds and couple in ways that are congruent to their own structures.

In addition to my interactions with each of the teachers being perturbational, the interactions I had with my advisors and with text regarding the theory were also perturbational. As time went on I began to dwell more and more self-referentially within the theory. As I read more, I looked back through the written work and made modifications which reflected the new level of coherence reached. Because of the recursive nature of the whole process, knowing when to stop data collection and when to stop writing was difficult.

> The recursive and nested nature of autopoiesis is antithetical to deduction and to linear thinking precisely because living systems are neither deductive nor linear; only our linguistic descriptions sometimes suffer in this way. Because of its circularity, the concept of autopoiesis provides a radical departure from established notions of the living. (Sawada and Pothier, 1988, p. 4)

I felt, at times, like an ant on Escher's Moebius Strip -- I was on the inside and the outside at the same time and, no matter how far I went, I would never get off. It is no wonder, for that is the nature of learning and of life, until one is no longer.

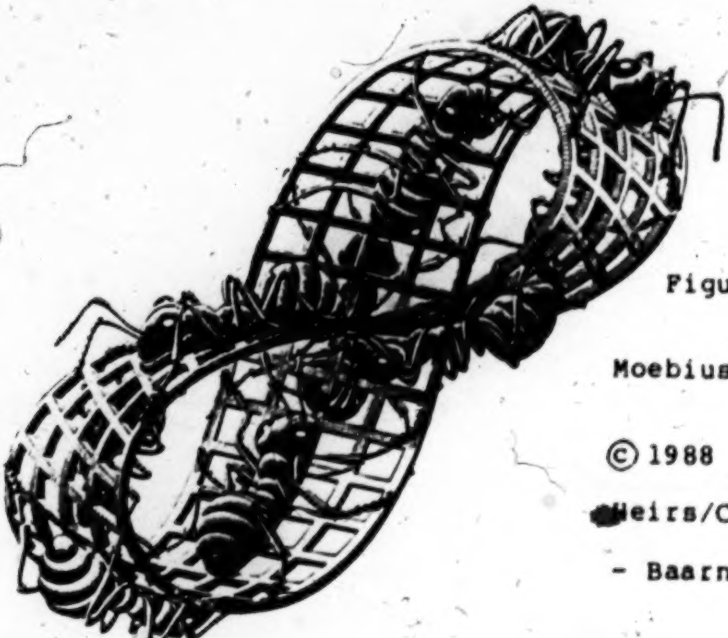

Figure 7

Moebius Strip II

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